AGENDA

EAGAR TOWN COUNCIL

REGULAR MEETING

OCTOBER 17, 2017

NOTICE OF A SPECIAL MEETING OF THE TOWN OF EAGAR
OCTOBER 17, 2017
7:00 P.M.
COUNCIL CHAMBER, 22 WEST 2ND STREET

PURSUANT TO A.R.S. 38-431.02, NOTICE IS HEREBY GIVEN TO THE MEMBERS OF THE TOWN COUNCIL OF THE TOWN OF EAGAR AND THE GENERAL PUBLIC THAT THE TOWN COUNCIL WILL HOLD A **SPECIAL MEETING OPEN TO THE PUBLIC ON THURSDAY, OCTOBER 17, 2017, BEGINNING AT 7:00 P.M., IN THE COUNCIL CHAMBERS LOCATED AT 22 W. 2ND STREET, EAGAR, ARIZONA.**

AGENDA

1. **WELCOME AND CALL MEETING TO ORDER**

2. **ROLL CALL**

3. **NEW BUSINESS**

   A. DISCUSSION AND CONSIDERATION TO APPROVE RESOLUTION 2017-15 ADOPTING THE 2017 APACHE COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN (BRUCE RAY)

   B. DISCUSSION AND CONSIDERATION TO APPROVE RESOLUTION 2017-16 ASSIGNING SIGNORS TO THE TOWN OF EAGAR BANK ACCOUNTS WITH NATIONAL BANK OF ARIZONA (KATIE BRADY)

   C. DISCUSSION AND CONSIDERATION TO APPROVE RESOLUTION 2017-17 ASSIGNING SIGNORS TO THE TOWN OF EAGAR BANK ACCOUNT WITH BANK OF THE WEST (KATIE BRADY)

4. **ADJOURNMENT**

THE PUBLIC IS WELCOME TO PLACE ITEMS ON THE COUNCIL AGENDAS WITH THE APPROVAL OF THE MAYOR OR TOWN MANAGER. A "PROPOSED AGENDA ITEM" REQUEST FORM IS AVAILABLE IN THE TOWN CLERK'S OFFICE OR AT WWW.EAGARAZ.GOV UNDER THE COUNCIL AND CLERK LINKS. ALL REQUESTS ARE DUE INTO THE TOWN CLERK'S OFFICE BY WEDNESDAY AT 12:00 NOON THE WEEK PROCEEDING THE COUNCIL MEETING. REGULAR COUNCIL MEETINGS ARE HELD ON THE 1ST TUESDAY, AND 3RD TUESDAY OF THE MONTH AS BUSINESS ALLOWS.

IF ANYONE WISHING TO ATTEND THIS MEETING HAS SPECIAL NEEDS DUE TO A DISABILITY, PLEASE CONTACT THE TOWN CLERK AT 928-333-4128 TWENTY-FOUR HOURS PRIOR TO THE MEETING AND ACCOMMODATIONS WILL BE PROVIDED. ANYONE NEEDING INFORMATION ON THE CURRENT MEETING, PLEASE CONTACT THE TOWN CLERK AT 928-333-4128.

POSTED BY: KATIE BRADY

Date: August 12, 2017
Time: 4:00 P.M.

Resolution No. 2017-15

A RESOLUTION OF THE MAYOR AND COUNCIL OF THE TOWN OF EAGAR, ARIZONA, ADOPTING THE 2017 APACHE COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN.

WHEREAS, the Town of Eagar has historically experienced severe damage from natural and human-caused hazards such as flooding, wildfire, drought, thunderstorms/high winds, and hazardous materials incidents on many occasions in the past century, resulting in loss of property and life, economic hardship, and threats to public health and safety; and

WHEREAS, the Town of Eagar Hazard Mitigation Plan (the Plan) has been developed after more than one year of research and work by the Town of Eagar in association and cooperation with the Apache County Multi-Jurisdictional Planning Team for the reduction of hazard risk to the community; and

WHEREAS, the Plan specifically addresses hazard mitigation strategies and plan maintenance procedures for Town of Eagar; and

WHEREAS, the Plan recommends several hazard mitigation actions/projects that will provide mitigation for specific natural and human caused hazards that impact the Town of Eagar, with the effect of protecting people and property from loss associated with those hazards;

NOW THEREFORE BE IT RESOLVED by the Mayor and Town Council of the Town of Eagar that:

1. The Plan is hereby adopted as an official plan of the Town of Eagar.

2. The plan shall be implemented, monitored and maintained by the officials/staff designated in the Plan for a period five (5) years with the full support of this resolution.

3. Future revisions and Plan maintenance actions required by the Disaster Mitigation Act of 2000 and FEMA, are hereby adopted as a part of this resolution for a period of five (5) years from the date of this resolution.

4. An annual report on the progress of the implementation elements of the Plan shall be presented to the Mayor and Council by October 31st of each calendar year.

PASSED AND ADOPTED by the Mayor and Town Council of Eagar, Arizona this 17th day of October 2017.

Approved this 17th day of October 2017, by the affirmative vote of Eagar Town Council of Eagar, Arizona.

ATTEST:

Katie Brady, Town Clerk

APPROVED:

Bryce Hamblin, Mayor

Approved as to Form:

Douglas E. Brown, Town Attorney

U.S. Department of Homeland Security
1111 Broadway, Suite 1200
Oakland, CA. 94607-4052

FEMA

September 25, 2017

Brannon Eagar
Director
Apache County Emergency Management
330 South Washington
St. Johns, AZ 85936

Dear Mr. Eagar:

We have completed our review of the *Apache County Multi-Jurisdictional Hazard Mitigation Plan,* and have determined that this plan is eligible for final approval pending its adoption by Apache County and all participating jurisdictions. Please see the enclosed list of approvable pending adoption jurisdictions.

Formal adoption documentation must be submitted to the FEMA Region IX office by the lead jurisdiction within one calendar year of the date of this letter, or the entire plan must be updated and resubmitted for review. We will approve the plan upon receipt of the documentation of formal adoption.

If you have any questions regarding the planning or review processes, please contact Alison Kearns, Lead Community Planner, at (510) 627-7125 or by email at alison.kearns@fema.dhs.gov.

Sincerely,

Jeffrey D. Lusk
Division Director
Mitigation Division
FEMA Region IX

Enclosure

cc: Lucrecia Hernandez, State Hazard Mitigation Officer, Arizona Department of Emergency and Military Affairs
Susan Austin, Planning Branch Manager, Arizona Department of Emergency and Military Affairs

Status of Participating Jurisdictions as of September 25, 2017

Jurisdictions – Adopted and Approved

#	Jurisdiction	Date of Adoption

Jurisdictions – Approvable Pending Adoption

#	Jurisdiction
1	Apache County
2	Eagar, Town of
3	Springerville, Town of
4	St. Johns, City of

REGION IX LOCAL MITIGATION PLAN REVIEW TOOL

The *Local Mitigation Plan Review Tool* demonstrates how the Local Mitigation Plan meets the regulation in 44 CFR §201.6 and offers states and FEMA mitigation planners an opportunity to provide feedback to the community.

- The **Regulation Checklist** provides a summary of FEMA's evaluation of whether the plan has addressed all requirements.
- The **Plan Assessment** identifies the plan's strengths as well as documents areas for future improvement. This section also includes a list of resources for implementation of the plan.
- The **Multi-Jurisdiction Summary Sheet** is a **mandatory** worksheet that is used to document which jurisdictions have participated in the planning process and are eligible to adopt the plan.
- The **Hazard Identification and Risk Assessment Matrix** is a tool for plan reviewers to identify if all components of Element B are met.

Jurisdiction: Apache County	**Title of Plan:** Apache County Multi-Jurisdictional Hazard Mitigation Plan	**Date of Plan:** August 2017
Local Point of Contact: Brannon Eagar	**Address:** 330 South Washington St. Johns, AZ 85936	
Title: Director		
Agency: Apache County Emergency Management		
Phone Number: (928) 337-7630	**E-Mail:** beagar@co.apache.az.us	

State Reviewer: Susan Austin	**Title:** Planning Branch Manager	**Date:** August 23, 2017
Date Received at State Agency		
Plan Not Approved		
Plan Approved/Sent to FEMA		

FEMA Reviewer: Alison Kearns	**Title:** Senior Community Planner	**Date:** September 18, 2017
Date Received in FEMA Region IX	August 23, 2017	
Plan Not Approved		
Plan Approvable Pending Adoption	September 25, 2017	
Plan Approved		

SECTION 1:
REGULATION CHECKLIST

INSTRUCTIONS: The Regulation Checklist must be completed by FEMA. The purpose of the Checklist is to identify the location of relevant or applicable content in the plan by element/sub-element and to determine if each requirement has been 'Met' or 'Not Met.' The 'Required Revisions' summary at the bottom of each element must be completed by FEMA to provide a clear explanation of the revisions that are required for plan approval. Required revisions must be explained for each plan sub-element that is 'Not Met.' Sub-elements should be referenced in each summary by using the appropriate numbers (A1, B3, etc.), where applicable. Requirements for each Element and sub-element are described in detail in the *Local Plan Review Guide* in Section 4, Regulation Checklist.

1. REGULATION CHECKLIST Regulation (44 CFR 201.6 Local Mitigation Plans)		Location in Plan (section and/or page number)	Met	Not Met
ELEMENT A. PLANNING PROCESS				
A1. Does the plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction? (Requirement §201.6(c)(1))	a. Does the plan document the planning process, including how it was prepared (with a narrative description, meeting minutes, sign-in sheets, or another method)?	Section 3.2 Appendix B	X	
	b. Does the plan list the jurisdiction(s) participating in the plan that are seeking approval?	Section 1	X	
	c. Does the plan identify who represented each jurisdiction? (At a minimum, it must identify the jurisdiction represented and the person's position or title and agency within the jurisdiction.)	Section 3.1	X	
A2. Does the plan document an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, agencies that have the authority to regulate development as well as other interests to be involved in the planning process? (Requirement §201.6(b)(2))	a. Does the plan document an opportunity for neighboring communities, local, and regional agencies involved in hazard mitigation activities, agencies that have the authority to regulate development, as well as other interested parties to be involved in the planning process?	Section 3.3 Appendix C	X	
	b. Does the plan identify how the stakeholders were invited to participate in the process?	Section 3.3 Appendix C	X	
A3. Does the plan document how the public was involved in the planning process during the drafting stage? (Requirement §201.6(b)(1))		Section 3.3 Appendix C	X	

1. REGULATION CHECKLIST Regulation (44 CFR 201.6 Local Mitigation Plans)		Location in Plan (section and/or page number)	Met	Not Met
A4. Does the plan describe the review and incorporation of existing plans, studies, reports, and technical information? (Requirement §201.6(b)(3))		Section 3.4	X	
A5. Is there discussion of how the community(ies) will continue public participation in the plan maintenance process? (Requirement §201.6(c)(4)(iii))		Section 7.4	X	
A6. Is there a description of the method and schedule for keeping the plan current (monitoring, evaluating and updating the mitigation plan within a 5-year cycle)? (Requirement §201.6(c)(4)(i))	a. Does the plan identify how, when, and by whom the plan will be **monitored** (how will implementation be tracked) over time?	Section 7.1	X	
	b. Does the plan identify how, when, and by whom the plan will be **evaluated** (assessing the effectiveness of the plan at achieving stated purpose and goals) over time?	Section 7.1	X	
	c. Does the plan identify how, when, and by whom the plan will be **updated** during the 5-year cycle?	Section 7.1	X	
ELEMENT A: REQUIRED REVISIONS				
ELEMENT B. HAZARD IDENTIFICATION AND RISK ASSESSMENT (Reviewer: See Section 4 for assistance with Element B)				
B1. Does the plan include a description of the type, location, and extent of all natural hazards that can affect each jurisdiction(s)? (Requirement §201.6(c)(2)(i))	a. Does the plan include a general **description** of all natural hazards that can affect each jurisdiction?	Section 4.3	X	
	b. Does the plan provide rationale for the omission of any natural hazards that are commonly recognized to affect the jurisdiction(s) in the planning area?	Section 4.1	X	
	c. Does the plan include a description of the **location** for all natural hazards that can affect each jurisdiction?	Section 4.3	X	
	d. Does the plan include a description of the **extent** for all natural hazards that can affect each jurisdiction?	Section 4.3	X	
B2. Does the plan include information on previous occurrences of hazard events and on the probability of future hazard	a. Does the plan include information on **previous occurrences** of hazard events for each jurisdiction?	Section 4.3	X	

1. REGULATION CHECKLIST Regulation (44 CFR 201.6 Local Mitigation Plans)		Location in Plan (section and/or page number)	Met	Not Met
events for each jurisdiction? (Requirement §201.6(c)(2)(i))	b. Does the plan include information on the **probability** of future hazard events for each jurisdiction?	Section 4.3	X	
B3. Is there a description of each identified hazard's impact on the community as well as an overall summary of the community's vulnerability for each jurisdiction? (Requirement §201.6(c)(2)(ii))	a. Is there a description of each hazard's **impacts** on each jurisdiction (what happens to structures, infrastructure, people, environment, etc.)?	Section 4.3	X	
	b. Is there a description of each identified hazard's overall **vulnerability** (structures, systems, populations, or other community assets defined by the community that are identified as being susceptible to damage and loss from hazard events) for each jurisdiction?	Section 4.3	X	
B4. Does the plan address NFIP insured structures within the jurisdiction that have been repetitively damaged by floods? (Requirement §201.6(c)(2)(ii))		Section 4.3.1	X	
ELEMENT B: REQUIRED REVISIONS				
ELEMENT C. MITIGATION STRATEGY				
C1. Does the plan document each jurisdiction's existing authorities, policies, programs and resources and its ability to expand on and improve these existing policies and programs? (Requirement §201.6(c)(3))	a. Does the plan document each jurisdiction's existing authorities, policies, programs and resources?	Section 6.2	X	
	b. Does the plan document each jurisdiction's ability to expand on and improve these existing policies and programs?	Section 6.2	X	
C2. Does the plan address each jurisdiction's participation in the NFIP and continued compliance with NFIP requirements, as appropriate? (Requirement §201.6(c)(3)(ii))		Section 4.3.1	X	
C3. Does the plan include goals to reduce/avoid long-term vulnerabilities to the identified hazards? (Requirement §201.6(c)(3)(i))		Section 6.1	X	
C4. Does the plan identify and analyze a comprehensive range of specific mitigation actions and projects for each jurisdiction being considered to reduce the effects of hazards, with emphasis on new and existing buildings and	a. Does the plan identify and analyze a comprehensive range (different alternatives) of specific mitigation actions and projects to reduce the impacts from hazards?	Section 6.3	X	

1. REGULATION CHECKLIST Regulation (44 CFR 201.6 Local Mitigation Plans)		Location in Plan (section and/or page number)	Met	Not Met
infrastructure? (Requirement §201.6(c)(3)(ii))	b. Does the plan identify mitigation actions for every hazard posing a threat to each participating jurisdiction?	Section 6.3	X	
	c. Do the identified mitigation actions and projects have an emphasis on new and existing buildings and infrastructure?	Section 6.3	X	
C5. Does the plan contain an action plan that describes how the actions identified will be prioritized (including cost benefit review), implemented, and administered by each jurisdiction? (Requirement §201.6(c)(3)(iv)); (Requirement §201.6(c)(3)(iii))	a. Does the plan explain how the mitigation actions and projects will be prioritized (including cost benefit review)?	Section 6.3	X	
	b. Does the plan identify the position, office, department, or agency responsible for implementing and administering the action/project, potential funding sources and expected timeframes for completion?	Section 6.3	X	
C6. Does the plan describe a process by which local governments will integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate? (Requirement §201.6(c)(4)(ii))	a. Does the plan identify the local planning mechanisms where hazard mitigation information and/or actions may be incorporated?	Section 7.3	X	
	b. Does the plan describe each community's process to integrate the data, information, and hazard mitigation goals and actions into other planning mechanisms?	Section 7.3	X	
	c. The updated plan must explain how the jurisdiction(s) incorporated the mitigation plan, when appropriate, into other planning mechanisms as a demonstration of progress in local hazard mitigation efforts.	Section 7.3	X	
ELEMENT C: REQUIRED REVISIONS				
ELEMENT D. PLAN REVIEW, EVALUATION, AND IMPLEMENTATION (Applicable to plan updates only)				
D1. Was the plan revised to reflect changes in development? (Requirement §201.6(d)(3))		Section 4.3	X	
D2. Was the plan revised to reflect progress in local mitigation efforts? (Requirement §201.6(d)(3))		Appendix D	X	

1. REGULATION CHECKLIST Regulation (44 CFR 201.6 Local Mitigation Plans)	Location in Plan (section and/or page number)	Met	Not Met
D3. Was the plan revised to reflect changes in priorities? (Requirement §201.6(d)(3))	Section 6.1 Appendix D	X	
ELEMENT D: REQUIRED REVISIONS			
ELEMENT E. PLAN ADOPTION			
E1. Does the plan include documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval? (Requirement §201.6(c)(5))	Pending APA Status		X
E2. For multi-jurisdictional plans, has each jurisdiction requesting approval of the plan documented formal plan adoption? (Requirement §201.6(c)(5))	Pending APA Status		X
ELEMENT E: REQUIRED REVISIONS			
ELEMENT F. ADDITIONAL STATE REQUIREMENTS (Optional for State Reviewers only; not to be completed by FEMA)			
F1.			
F2.			
ELEMENT F: REQUIRED REVISIONS			

SECTION 2:
PLAN ASSESSMENT

A. Plan Strengths and Opportunities for Improvement

This section provides a discussion of the strengths of the plan document and identifies areas where these could be improved beyond minimum requirements.

Element A: Planning Process

Strengths:

1) There were/are an abundance of opportunities for local stakeholder and public involvement during both the planning process and plan maintenance. This shows a true community-wide dedication to mitigation.
2) Breaking out the planning activities by jurisdiction allows for a clearer understanding of what occurred in each jurisdiction, but also helps identify responsibility for the different planning team members involved.
3) The plan maintenance section provides a clear path for moving forward with keeping this plan alive over the next five years. I also really appreciate the honesty about not holding plan maintenance meetings over the last five years and the intent to do this moving forward.

Opportunities for Improvement:

1) Consider holding plan maintenance meetings with other similar engagements that have similar audiences to help maximize people's time and also to create more integration of risk reduction throughout the community.

Element B: Hazard Identification and Risk Assessment

Strengths:

1) Even though there aren't many hazards being profiled, every single one is important to Apache County and is thoroughly addressed. Every profile will leave the reader with an understanding of the hazard and its impacts on Apache County.
2) The maps in this plan are easy to read and understand, yet show complex information for the different hazards.
3) Using Hazus for loss estimates is a wise decision and provides more context to the true impacts and vulnerabilities in the county.
4) Addressing climate in the different profiles is a great addition to the plan and provides more context about the future risk of the hazards, rather than just their past history.

Opportunities for Improvement:

1) Continue to collect local data to improve the outputs from your Hazus loss estimations.
2) Continue to monitor and incorporate climate change information for Arizona and Apache County.

Element C: Mitigation Strategy

Strengths:

1) The mitigation capabilities are not only thorough, but organized in a fashion that allow for easier understanding and the ability to find more information quickly.
2) There is a wide range of mitigation actions that provides many options for Apache County to reduce their risk from their identified hazards. Almost all of the actions are also "true" mitigation and not response or preparedness related, bravo!
3) The integration of this mitigation plan into other planning mechanisms throughout the county is admirable. By spreading mitigation practices into all sectors, it helps make risk reduction more commonplace.

Opportunities for Improvement:

1) Continue to monitor and look for ways to expand and improve upon your existing mitigation capabilities. These are the "tools in your toolbox" that help get mitigation done.

Element D: Plan Update, Evaluation, and Implementation (*Plan Updates Only*)

Strengths:

1) There is a clear explanation of the progress made and the way mitigation actions transitioned to this update of the hazard mitigation plan.
2) Having a section in each hazard profile discussing how development is changing and the potential impacts on the risks and vulnerabilities is awesome! I appreciate how this plan met this particular element because it provides much more context for the county and how risk from each hazard might be shifting.

Opportunities for Improvement:

1) When mitigation projects are completed, be sure to capture that success in the mitigation plan. Mitigation is hard! Don't let that effort be completed and not celebrated. Lessons can also be learned from both successes and challenges that are reflected in a plan.

B. Resources for Implementing and Updating Your Approved Plan

This resource section is organized into three categories:

1) Guidance and Resources
2) Training Topics and Courses
3) Funding Sources

Guidance and Resources

Local Mitigation Planning Handbook
https://www.fema.gov/media-library/assets/documents/31598
Beyond the Basics
http://mitigationguide.org/
Mitigation Ideas
https://www.fema.gov/media-library/assets/documents/30627
Plan Integration: Linking Local Planning Efforts
https://www.fema.gov/media-library/assets/documents/108893
Integrating Disaster Data into Hazard Mitigation Planning
https://www.fema.gov/media-library/assets/documents/103486
Integrating Historic Property and Cultural Resource Considerations into Hazard Mitigation Planning
https://www.fema.gov/ar/media-library/assets/documents/4317
Community Rating System User Manual
https://www.fema.gov/media-library/assets/documents/8768
U.S. Climate Resilient Toolkit
https://toolkit.climate.gov/
2014 National Climate Assessment
http://nca2014.globalchange.gov/
Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation
http://ipcc-wg2.gov/SREX/images/uploads/SREX-All_FINAL.pdf
FY15 Hazard Mitigation Assistance Unified Guidance
https://www.fema.gov/media-library/assets/documents/103279
Climate Resilient Mitigation Activities for Hazard Mitigation Assistance
https://www.fema.gov/media-library/assets/documents/110202

Training

More information at https://training.fema.gov/emi.aspx or through your State Training Officer

Mitigation Planning

IS-318 Mitigation Planning for Local and Tribal Communities
https://training.fema.gov/is/courseoverview.aspx?code=is-318
IS-393 Introduction to Hazard Mitigation
https://training.fema.gov/is/courseoverview.aspx?code=is-393.a
G-318 Preparing and Reviewing Local Plans
G-393 Mitigation for Emergency Managers

Hazard Mitigation Assistance (HMA) Grant Programs

IS-212.b Introduction to Unified HMA
http://www.training.fema.gov/is/courseoverview.aspx?code=IS-212.b

IS-277 Benefit Cost Analysis Entry Level
http://www.training.fema.gov/is/courseoverview.aspx?code=IS-277

E-212 HMA: Developing Quality Application Elements

E-213 HMA: Application Review and Evaluation

E-214 HMA: Project Implementation and Programmatic Closeout

E-276 Benefit-Cost Analysis Entry Level

GIS and Hazus-MH

IS-922 Application of GIS for Emergency Management
http://www.training.fema.gov/is/courseoverview.aspx?code=IS-922

E-190 ArcGIS for Emergency Managers

E-296 Application of Hazus-MH for Risk Assessment

E-313 Basic Hazus-MH

Floodplain Management

E-273 Managing Floodplain Development through the NFIP

E-278 National Flood Insurance Program/ Community Rating System

Potential Funding Sources

Hazard Mitigation Grant Program

POC: FEMA Region IX and State Hazard Mitigation Officer

Website: https://www.fema.gov/hazard-mitigation-grant-program

Pre-Disaster Mitigation Grant Program

POC: FEMA Region IX and State Hazard Mitigation Officer

Website: https://www.fema.gov/pre-disaster-mitigation-grant-program

Flood Mitigation Assistance Grant Program

POC: FEMA Region IX and State Hazard Mitigation Officer

Website: https://www.fema.gov/flood-mitigation-assistance-grant-program

Emergency Management Performance Grant Program

POC: FEMA Region IX

Website: https://www.fema.gov/emergency-management-performance-grant-program

SECTION 3:
MULTI-JURISDICTIONAL SUMMARY SHEET

INSTRUCTIONS: For multi-jurisdictional plans, this summary sheet must be completed by listing each participating jurisdiction that is eligible to adopt the plan.

MULTI-JURISDICTION SUMMARY SHEET					
#	Jurisdiction Name	Jurisdiction Type	Eligible to Adopt the Plan?	Plan POC	Email
1	Apache	County	Yes	Brannon Eagar	beagar@co.apache.az.us
2	Eagar	Town	Yes	Bruce Ray	b.ray@eagaraz.gov
3	Springerville	Town	Yes	Steve West	swest@springervilleaz.gov
4	St. Johns	City	Yes	Paul Ramsey	pramsey@sjaz.us
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					

SECTION 4:
HAZARD IDENTIFICATION AND RISK ASSESSMENT MATRIX (OPTIONAL)

INSTRUCTIONS: This matrix can be used by the plan reviewer to help identify if all of the components of Element B have been met. List out natural hazard names that are identified in the plan in the column labeled "Hazards" and put a "Y" or "N" for each component of Element B.

HAZARD IDENTIFICATION AND RISK ASSESSMENT MATRIX							
Hazard	Requirement Met? (Y/N)						
	Type	Location	Extent	Previous Occurrences	Probability	Impacts	Vulnerabilities

RESOLUTION NO. 2017-16

RESOLUTION OF AUTHORIZATION BY THE MAYOR AND COUNCIL OF THE TOWN OF EAGAR, ARIZONA, A MUNICIPAL CORPORATION OF THE STATE OF ARIZONA, ASSIGNING SIGNORS TO THE TOWN OF EAGAR BANK ACCOUNTS WITH NATIONAL BANK OF ARIZONA.

WHEREAS, it is required under the guidelines of National Bank of Arizona (NBA) that signors to the Town of Eagar bank accounts, 0680000425 and 0680000548, be assigned through resolution.

WHEREAS, the Town of Eagar desires to assign signatory's as follows.

Bryce Hamblin, Mayor
Steve Erhart, Vice-Mayor
Bruce Ray, Interim Town Manager
Mary Brady, Finance Manager/Town Clerk
Michael Sweetser, Police Chief
Jeremiah Loyd, Community Development Director
Lourdes Carnright, Utility Clerk

THEREFORE, BE IT RESOLVED, by the Mayor and Council of the Town of Eagar, Arizona, that the Town Council assigns signors to the NBA accounts as listed above.

PASSED AND ADOPTED by the Mayor and Town Council of the Town of Eagar, Arizona this 17th day of October, 2017.

Attest:

_____

Katie Brady, Town Clerk

Approved:

_____

Bryce Hamblin, Mayor

Approved as to Form:

_____

Douglas E. Brown, Town Attorney

RESOLUTION NO. 2017-17

RESOLUTION OF AUTHORIZATION BY THE MAYOR AND COUNCIL OF THE TOWN OF EAGAR, ARIZONA, A MUNICIPAL CORPORATION OF THE STATE OF ARIZONA, ASSIGNING SIGNORS TO THE TOWN OF EAGAR BANK ACCOUNTS WITH BANK OF THE WEST.

WHEREAS, it is required under the guidelines of Bank of the West that signors to the Town of Eagar bank account, 630003267, be assigned through resolution.

WHEREAS, the Town of Eagar desires to assign signatory's as follows.

Bryce Hamblin, Mayor
Steve Erhart, Vice-Mayor
Bruce Ray, Interim Town Manager
Mary Brady, Finance Manager/Town Clerk
Michael Sweetser, Police Chief
Jeremiah Loyd, Community Development Director
Lourdes Carnright, Utility Clerk

THEREFORE, BE IT RESOLVED, by the Mayor and Council of the Town of Eagar, Arizona, that the Town Council assigns signors to the NBA accounts as listed above.

PASSED AND ADOPTED by the Mayor and Town Council of the Town of Eagar, Arizona this 17th day of October, 2017.

Attest:

_____

Katie Brady, Town Clerk

Approved:

_____

Bryce Hamblin, Mayor

Approved as to Form:

_____

Douglas E. Brown, Town Attorney

Apache County Multi-Jurisdictional Hazard Mitigation Plan

2017

TABLE OF CONTENTS

MAPS

TABLES

FIGURES

This Plan was developed in cooperation with:

Apache County

Town of Eagar

Town of Springerville

City of St. Johns

SECTION 1: INTRODUCTION

1.1 Purpose

This Plan was prepared to guide hazard mitigation to better protect the people, property, community assets and land from the effects of hazards. This Plan demonstrates the participants' commitment to reducing risks from hazards and serves as a tool to help decision makers direct mitigation activities and resources. This Plan was also developed to make the participants eligible for certain types of Federal disaster assistance and hazard mitigation grant funding.

1.2 Background and Scope

Each year in the United States, disasters take the lives of hundreds and injure thousands more. Nationwide, taxpayers pay billions of dollars annually to help communities, organizations, businesses, and individuals recover from disasters. These monies only partially reflect the true cost of disasters, because additional expenses to insurance companies and nongovernmental organizations are not reimbursed by tax dollars. Many disasters are predictable, and much of the damage caused by these events can be alleviated or even eliminated.

Hazard mitigation is defined by FEMA as "any sustained action taken to reduce or eliminate long-term risk to human life and property from a hazard event." The results of a three-year congressionally mandated independent study to assess future savings from mitigation activities provides evidence that mitigation activities are highly cost-effective. On average, each dollar spend on mitigation saves society an average of $4 in avoided future losses in addition to saving lives and preventing injuries (National Institute of Building Science Multi-Hazard Mitigation Council 2005).

Examples of hazard mitigation measures include, but are not limited to the following:

- Development of mitigation standards, regulations, policies, and programs
- Land use/zoning policies
- Strong building code and floodplain management regulations
- Dam safety program, seawalls, and levee systems
- Acquisition of flood prone and environmentally sensitive lands
- Retrofitting/hardening/elevating structures and critical facilities
- Relocation of structures, infrastructure, and facilities out of vulnerable areas
- Public awareness/education campaigns
- Improvement of warning and evacuation systems

Hazard mitigation planning is the process through which hazards that threaten communities are identified, likely impacts of those hazards are determined, mitigation goals are set, and appropriate strategies to lessen impacts are determined, prioritized, and implemented. This Plan documents the planning process employed by the Planning Team. The Plan identifies relevant hazards and risks, and identifies the strategy that will be used to decrease vulnerability and increase resiliency and sustainability.

This Plan was prepared pursuant to the requirements of the Disaster Mitigation Action of 2000 and the implementing regulations set forth in the Federal Register (hereafter, these requirements will be referred to as the DMA2K). While the act emphasized the need for mitigation plans and coordinated mitigation planning and implementation efforts, the regulations established the requirements that

hazard mitigation plans must meet in order to be eligible for certain Federal disaster assistance and hazard mitigation funding under the Robert T. Stafford Disaster Relief and Emergency Act.

Information in this Plan will be used to help guide and coordinate mitigation activities and decisions for future land use. Proactive mitigation planning will help reduce the cost of disaster response and recovery to the community and its property owners by protecting structures, reducing exposure and minimizing overall community impacts and disruption. The community has been affected by hazards in the past and is thus committed to reducing future disaster impacts and maintaining eligibility for Federal funding.

This is a multi-jurisdictional plan that geographically covers the communities within the Apache County boundaries (hereinafter referred to as the Planning Area). The following communities participated in the planning process:

- Apache County
- Eagar
- Springerville
- St. Johns

1.3 Assurances

This Plan was prepared to comply with the requirements of the Robert T Stafford Disaster Relief and Emergency Assistance Act of 1988 (as amended by the DMA); all pertinent presidential directives associated with the U.S. Department of Homeland Security and FEMA; all aspects of 44 CFR pertaining to hazard mitigation planning and grants pertaining to the mitigation of adverse effects of disasters; interim final rule and final rules issued by FEMA; and all Office of Management and Budget circulars and other federal government documents, guidelines and rules.

The participants of this Plan assure that they will continue to comply with all applicable Federal statutes and regulations in effect with respect to the periods for which it receives grant funding, in compliance with 44 CFR 13.11(c). This Plan will be amended whenever necessary to reflect changes in Federal laws and statutes as required in 44 CFR 133.11(d).

1.4 Plan Organization

This Plan is organized as follows:

- Section 1: Introduction
- Section 2: Community Profile
- Section 3: Planning Process
- Section 4: Risk Assessment
- Section 5: Mitigation Strategy
- Section 6: Plan Maintenance

SECTION 2: COMMUNITY PROFILE

2.1 Apache County

According to the Arizona Department of Commerce[1], Apache County was carved from Yavapai County – one of Arizona's original four counties – on February 24, 1879, by the 10th Territorial Legislative Assembly. Leaders of St. Johns and Globe had petitioned for their towns to be the county seat, but the honor went temporarily to Snowflake, with the provision that an election would determine the permanent county seat. In November, 1879, on the strength of votes from the mining town of Clifton (now in Greenlee County), St. Johns was designated the county seat. Apache County is located in the northeastern portion of the State of Arizona.

The County is located in the very northeast corner of the State. Major roadway transportation routes through the County include: Interstate 40, U.S. Highways 60, 64, 160, 180, and 191, State Routes 61, 180A, 260, 261, 264, 273, and 473, and Indian Routes 4, 7, 12, 15, 33, 54, 59, and 63. The railway service crossing the County is the Burlington Northern Santa Fe (BNSF).

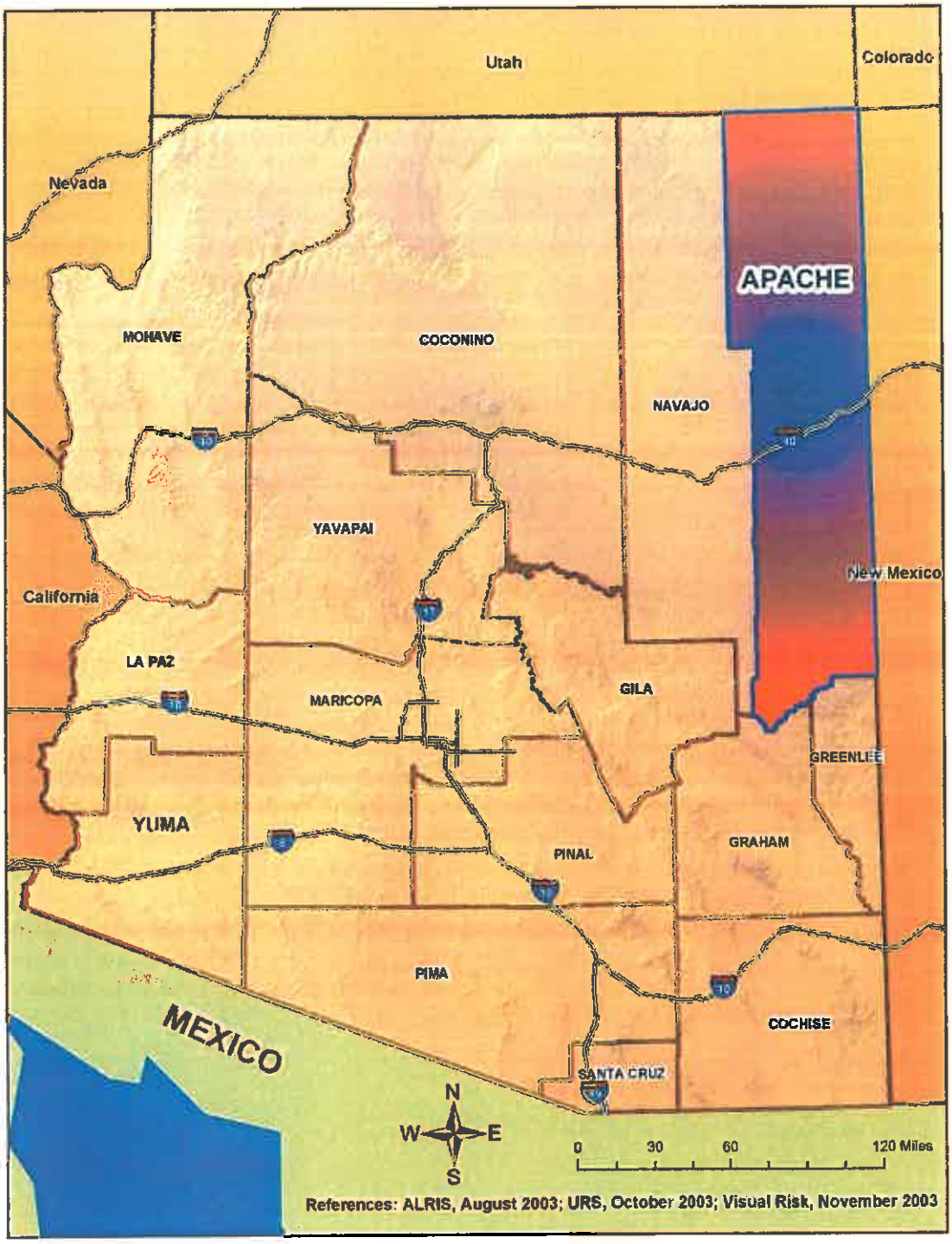
Apache County is divided into two distinct parts by the Mogollon Rim. The high country in the northern part of the county is considered Colorado Plateau Shrublands and is characterized by arid, desert-like conditions with mesas and plateaus. The southern part is considered Arizona Mountain Forests and is characterized by rugged mountain area, heavily wooded with pinon juniper and ponderosa pine.

The geographical characteristics of Apache County have been mapped into two terrestrial ecoregions[2], which are mentioned above, and described below:

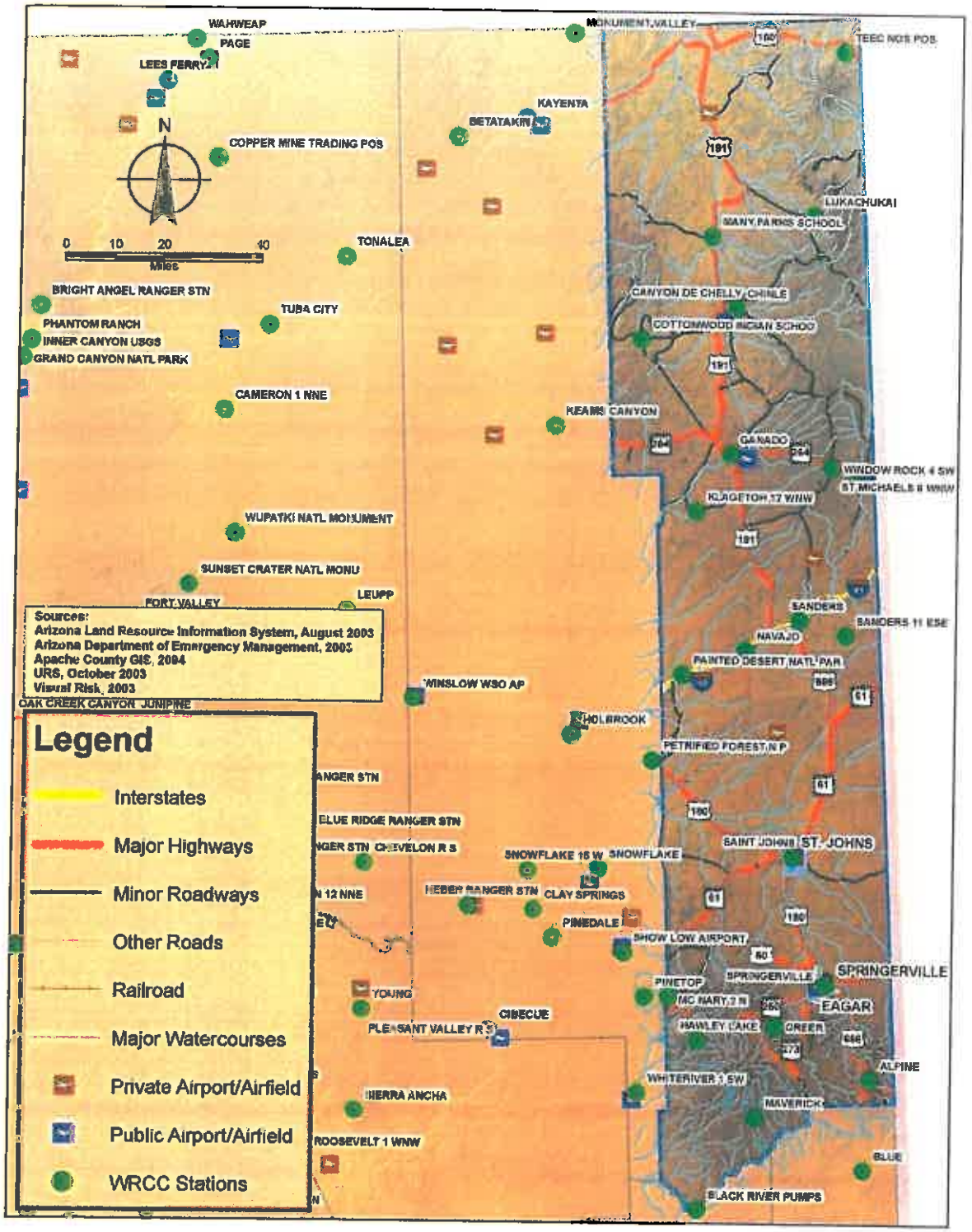
- **Arizona Mountain Forests** – this ecoregion contains a mountainous landscape, with moderate to steep slopes. Elevations in this zone range from approximately 6,000-9,000 feet, resulting in comparatively cool summers and cold winters. Vegetation in these areas is largely heavily wooded with pinon juniper and ponderosa pine forests, high altitude grasses, shrubs, and brush. A smaller section of Arizona Mountain Forests also exists to a smaller degree in the northeast corner of the county.
- **Colorado Plateau Shrublands** – this ecoregion covers the northern portion of the county and makes up the majority of the county with elevations that average around 6,000-6,500 feet. Vegetation in this ecoregion is comprised mainly of Plains Grassland and Great Basin Desert scrub. Temperatures can vary widely in this zone, with comparatively warm summers and cold winters. The high country in the northern part of the county is arid and desert like with mesa and plateaus.

[1] Arizona Department of Commerce, 2003, *Community Profile for Apache County.*

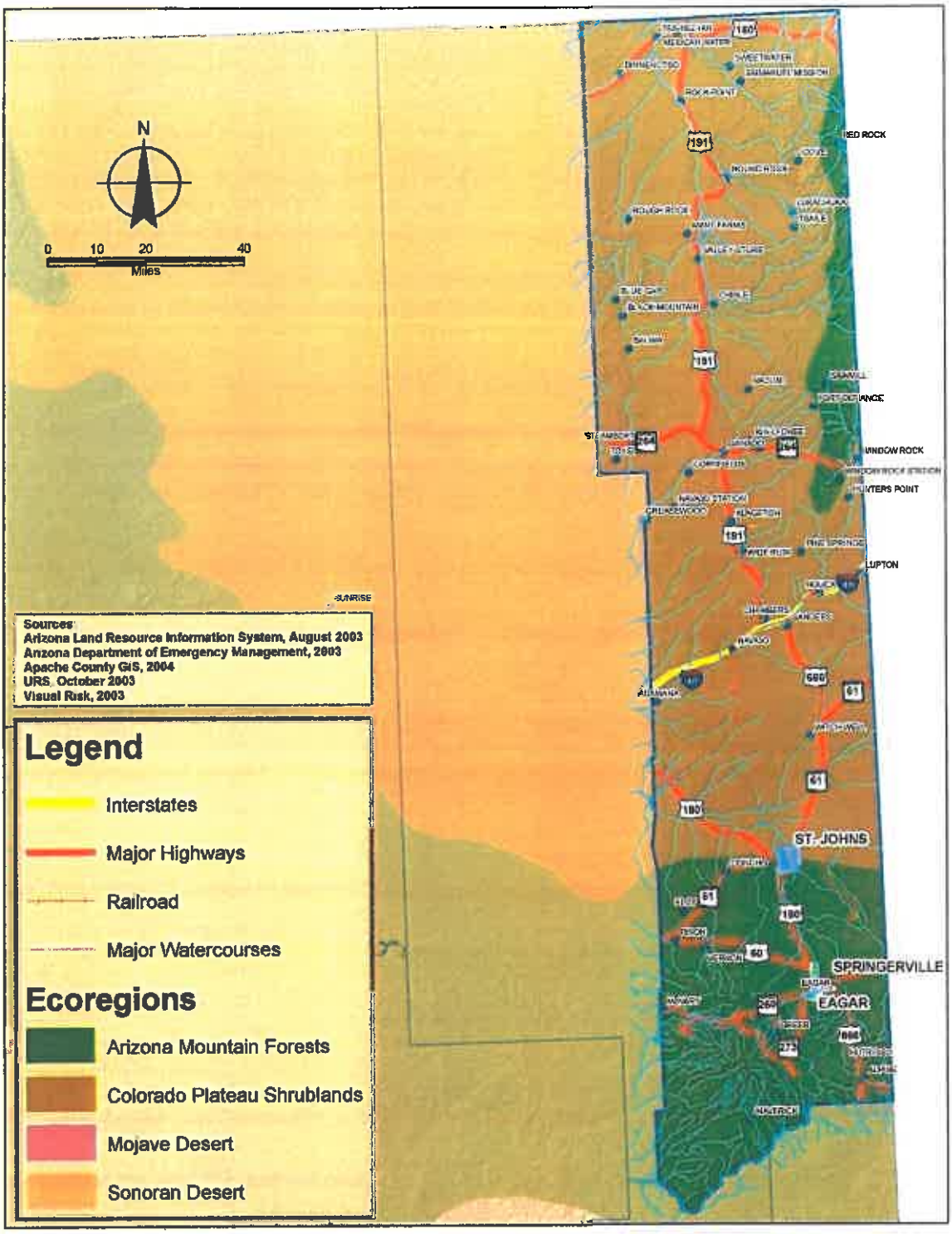
[2] URS, 2004, *State of Arizona All Hazard Mitigation Plan.*



Map 2-1: Vicinity



Map 2-2: Transportation Routes



Map 2-3: Terrestrial Ecoregions

Climate

The majority of Apache County can be classified as Colorado Plateau Shrubland and Arizona Mountain Forest. The elevation range for these two ecoregions in Apache County is from approximately 5,000 - 9,000 feet. Such a range in elevation results in differences in climate.

Average temperatures within Apache County range from below freezing during the winter months to over 100°F during the hot summer months. The severity of temperatures in either extreme is highly dependent upon the location, and more importantly the altitude, within the County.

Precipitation throughout Apache County is governed to a great extent by elevation and season of the year. From November through March, storm systems from the Pacific Ocean cross the state as broad winter storms producing mild precipitation events and snowstorms at the higher elevations. Summer rainfall begins early in July and usually lasts until mid-September. Moisture-bearing winds move into Arizona at the surface from the southwest (Gulf of California) and aloft from the southeast (Gulf of Mexico). The shift in wind direction, termed the North American Monsoon, produces summer rains in the form of thunderstorms that result largely from excessive heating of the land surface and the subsequent lifting of moisture-laden air, especially along the primary mountain ranges. Thus, the strongest thunderstorms are usually found in the mountainous regions of the central southeastern portions of Arizona. These thunderstorms are often accompanied by strong winds, blowing dust, and infrequent hail storms.

Table 2-1: Average Climate
(Based on Location of Springerville)

		Temperatures (F)		
Month	**Precip (in)**	**Min**	**Avg**	**Max**
Jan	0.52	17.3	33.3	49.4
Feb	0.44	20.5	36.9	53.3
Mar	0.42	23.8	41.4	58.9
Apr	0.36	29.9	48.2	66.5
May	0.47	37.4	55.9	74.3
June	0.52	44.4	63.5	82.6
July	2.46	51.8	68.1	84.4
Aug	3.05	50.8	66.1	81.3
Sept	1.57	43.4	60.3	77.3
Oct	0.97	32.2	50.4	68.6
Nov	0.52	22.5	40.5	58.4
Dec	0.58	16.5	33.2	49.9

Source: https://www.ncdc.noaa.gov/cdo-web/datatools/normals

Population

The largest community of the three located in Apache County is the Town of Eagar. All three incorporated cities are geographically located in the southern portion of the County. The other communities located throughout the County, with most situated along major highways are mostly comprised of only a few structures or landmarks.

Table 2-2: Population Estimates	
Jurisdiction	**2016**
Apache County (total)	72,131
Eagar	4,906
St. Johns	3,499
Springerville	1,971
Unincorporated	61,755
Source: AZ Office of Economic Opportunity 2017 Note: Estimates do not include Tribal population.	

Economy

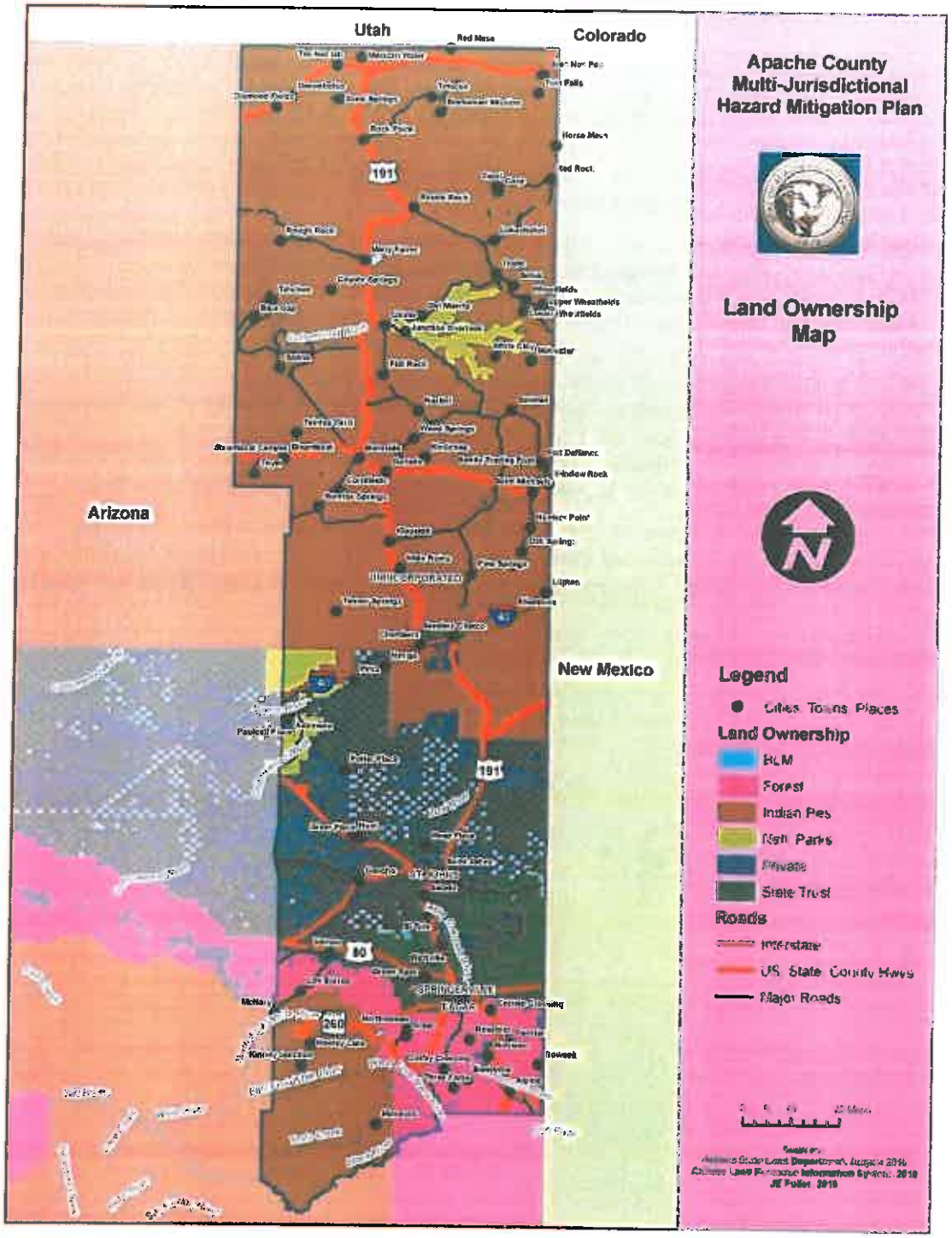
Originally, Apache County encompassed all of present day Navajo County, part of Gila County and part of Graham County, but by 1895, its size had been reduced to the 11,216 square miles it occupies today.

The forested White Mountains and green pastures in the south of the county contrast sharply with the high, dry, colorful plateau region of the north. Excellent fishing, hunting, and skiing make the White Mountains a year-round recreation area. Numerous archaeological sites are open to the public.

There are a total of 53 unincorporated communities scattered across the County, with many being comprised of only one structure or prominent landmark. The majority of these unincorporated communities is also located on the Indian Reservations and will be addressed in the Reservation mitigation plans.

Fort Defiance, Arizona's first military post, the Town of Ganado, and Hubbell's famous trading post (now a National Historic Site) are located in northern Apache County on the Navajo Reservation. Chinle, another Indian trade center, is the gateway to the spectacular Canyon de Chelly National Monument. Also in Apache County are the stunning Petrified Forest National Park and the Painted Desert, Window Rock, the Navajo tribal capital, and Casa Malpais Archaeological site. The Apache Indian Reservation, located in the White Mountains around the settlement of Fort Apache, includes 25 excellent fishing lakes and the Sunrise Park Ski Resort for outdoor recreation, as well as a highly successful lumber mill and a casino.

Within Apache County, the US Forest Service, US Bureau of Land Management, and State Land constitute nearly 21% of combined land ownership. About 65.4% of the County is comprised of Indian Reservation land. The remaining portions are either individually or corporately owned.



Map 2-4: Apache County Land Ownership

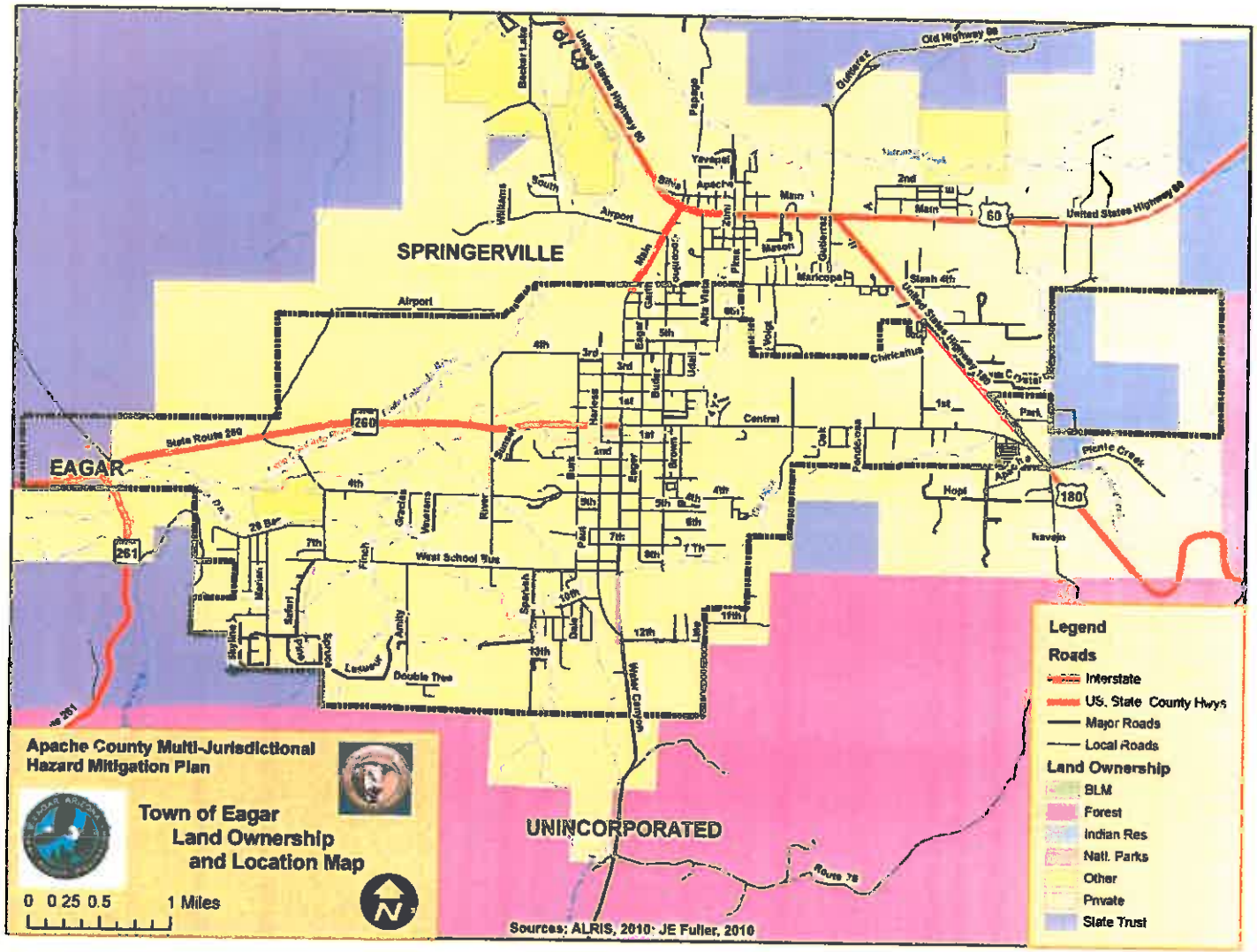
4.2 Eagar

The Town of Eagar was founded in 1888 by Mormon settlers. Eagar is one of three incorporated communities in Apache County. It is located in the southern portion of Apache County in eastern Arizona at the east end of SR 260 near the junction of SR 260 & US 180. The Town is located on a high rolling desert plateau within close proximity to the Apache-Sitgreaves National Forest Arizona. The present incorporated Town limits occupy approximately 11.6 square miles. The Town of Springerville shares Eagar's northern border.[3]

For many years, agriculture and trading were the focus of the area. While ranching is still important, the construction of two power plants sawmills and other timber-related industries and the growing tourism/recreation trade have broadened the economic base. Eagar is in the center of the White Mountain Recreation Area. Tourist activity brings approximately 100,000 people to the national forest, making the trade and services sector vital to the economy. Therefore, major industries significant to the economy of Eagar include: Agriculture, Ranching, two major Power Plants, Timber related industries, Government Services, Retail Trade and Services and Tourism/Recreation. The civilian labor force in June 2011 was 2,024 with an unemployment rate of 5.6%. Electricity is supplied by Navopache Electric Cooperative (NEC), which has no major facilities in the City. The Town of Eagar provides water and wastewater services. There are no hospitals in town.

The Little Colorado River is the primary watercourse located within the Town. Other major watercourses include Grapevine Creek, Water Canyon Creek, Picnic Creek, Nutrioso Creek, Amity Ditch and Big Ditch. The remaining watercourses are primarily small ephemeral washes.

[3] Arizona Department of Commerce, 2009, *Community Profile for Eagar, Arizona.*



Map 2-5: Eagar Land Ownership

4.3 Springerville

The Town of Springerville is located in the southern portion of Apache County in eastern Arizona. Springerville is one of three incorporated communities in Apache County. The Town is located on a high rolling desert plateau within close proximity to the Apache-Sitgreaves National Forest. Springerville is on the banks of the Little Colorado River. The present incorporated Town limits occupy approximately 14 square miles.

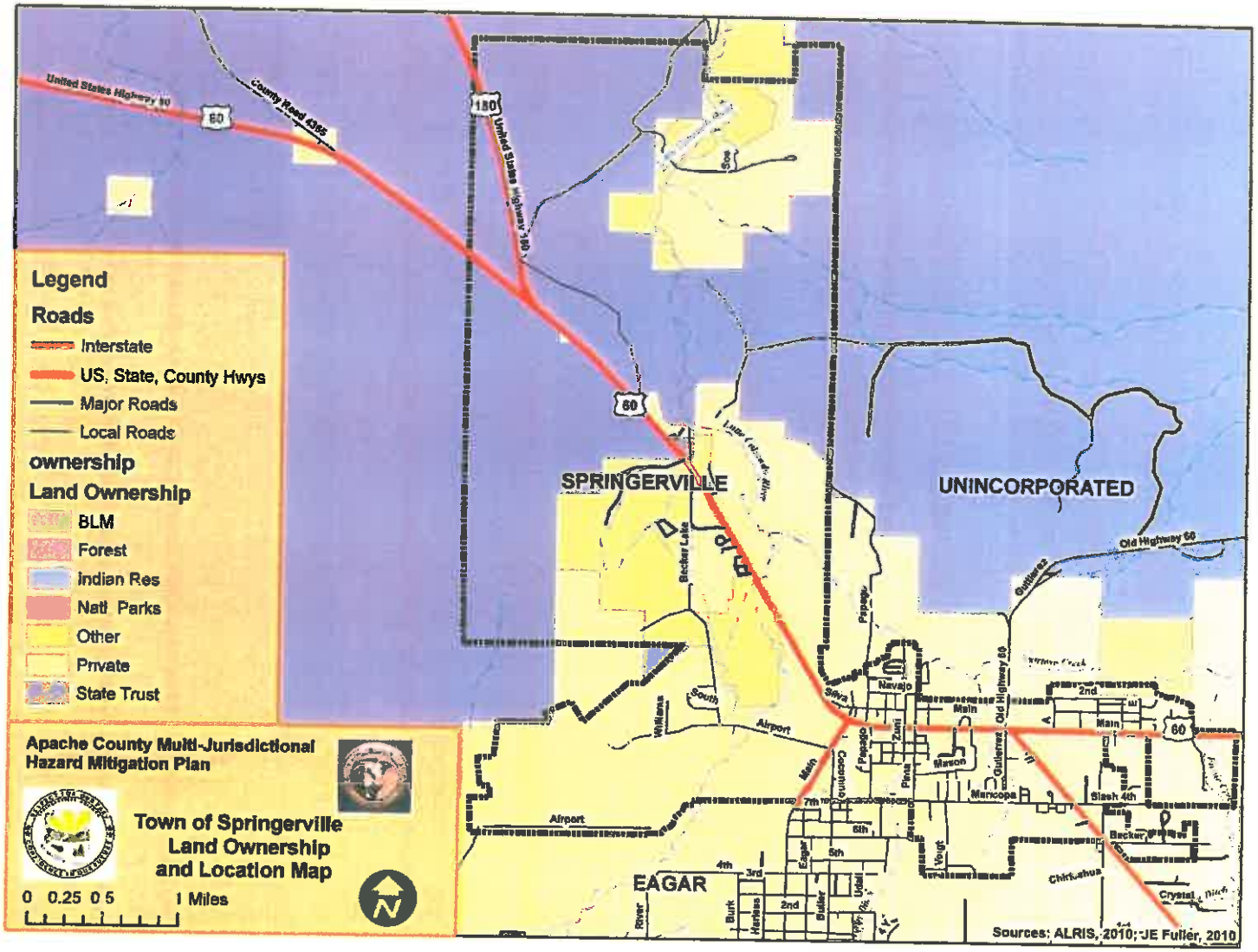
Originally established in 1879, the Town of Springerville is at the heart of the growing southwest. Growing around Henry Springer's trading post, the town was incorporated in 1948. Along with its neighbor Eagar, both communities reside in the Round Valley. Located on the northeast slopes of the White Mountains, Springerville is set against one of the largest stands of ponderosa pines in the world. Springerville has long been known as the "Gateway to the White Mountains" and recreation areas. Tourist activity brings approximately 100,000 people to the national forest, making the trade and services vital to the economy.

State Routes 180/191 and U.S. Highway 60 – the National Coast to Coast Highway traverse through the Town. Springerville Municipal Airport is an unmanned general aviation airport, and serves as a base for aeronautical medical transport and Forest Service fire crews.

The Little Colorado River is the primary watercourse located within the Town. Other major watercourses include the Grapevine Creek, Water Canyon Creek, Picnic Creek, Nutrioso Creek, Amity Ditch, and Big Ditch. The remaining watercourses are primarily small ephemeral washes.

Springerville is the economic hub of southern Apache County, with two hardware stores, a full service pharmacy and a full grocery store, as well as numerous retailers, restaurants and motels. Casa Malpais Archaeological Park is on the National Register of Historic Places. According to the community profile for Springerville, the major industries significant to the economy of Springerville include: Agriculture, Ranching, two major Power Plants, Timber related industries, Government Services, Health Care, Retail Trade and Services, and Tourism/Recreation.

White Mountain Regional Medical Center is a licensed critical access hospital, providing cardiopulmonary, chiropractic, emergency, laboratory, medical imaging, rehabilitation, sleep diagnostics, elective surgery, nuclear medicine, telemedicine and a swing bed program.



Map 2-6: Springerville Land Ownership

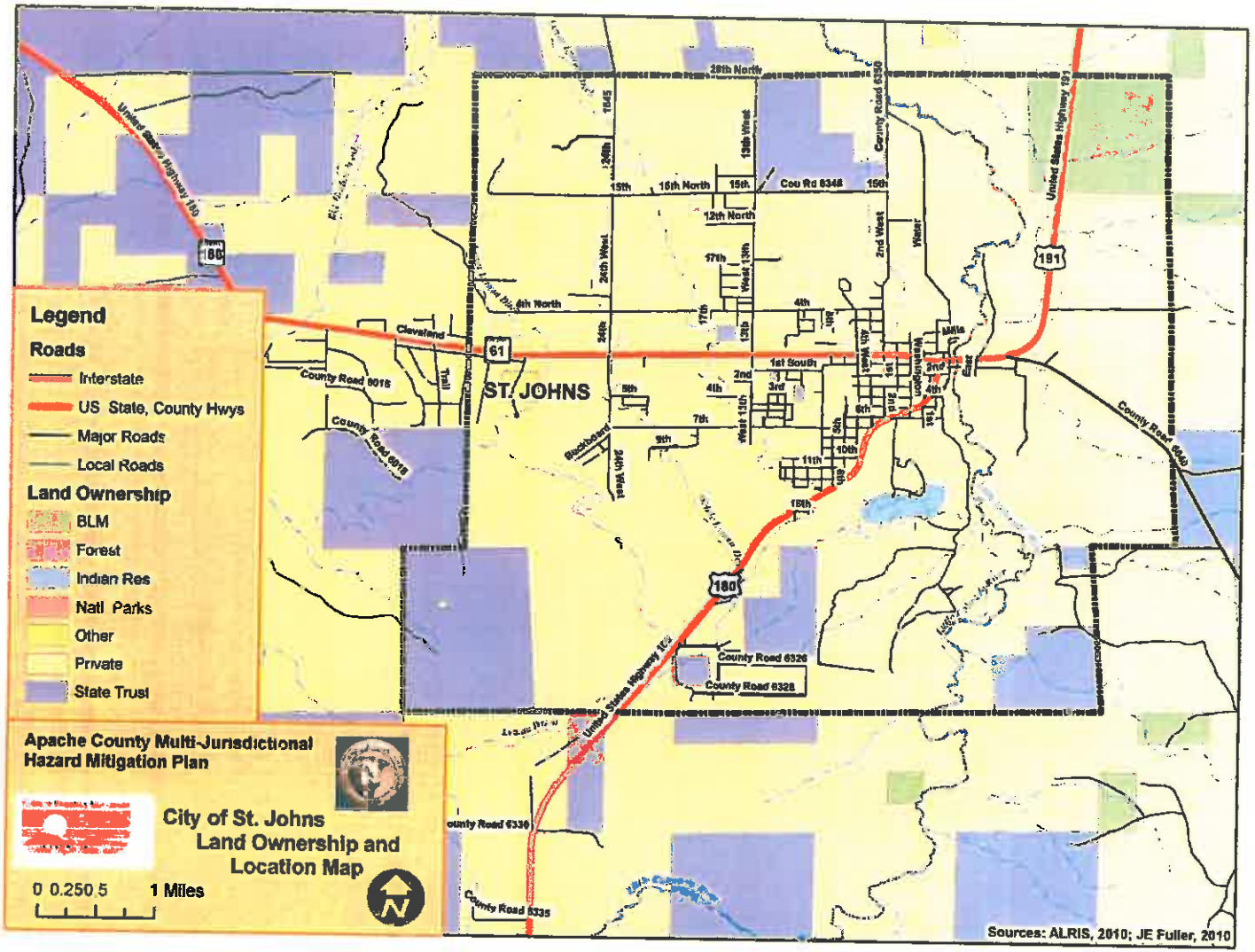
4.4 St. Johns

The City of St. Johns is located in the southern portion of Apache County in northeastern Arizona. St. Johns is one of three incorporated communities in Apache County and serves as the County seat. The City is located on a high rolling desert plateau. St. Johns is on the banks of the Little Colorado River. The present incorporated City limits occupy approximately 25 square miles. The average elevation is 5,880 feet and State Routes 180 and 61 traverses through the City.

The Little Colorado River is the primary watercourse located within the City. Other major watercourses include the Lyman Ditch, Upper Lyman Ditch, Middle Lyman Ditch, and Lower Lyman Ditch. The remaining watercourses are primarily small ephemeral washes.

The City of St. Johns is located is split in half by the two different zones, the Colorado Plateau Shrublands in the north and the Arizona Mountain Forests in the south.

Originally named El Vadito ("little river crossing") by Spanish explorers, St. Johns was a thriving Spanish-American agricultural community in 1873 when Solomon Barth acquired land and cattle and settled nearby. Mormon pioneers from Utah settled in St. Johns in 1879. The name El Vadito was changed to San Juan (Spanish for St. John) and to St. Johns when the town was established in 1880. St. Johns incorporated in 1946. Once a traditional agricultural community, St. Johns has become a location where traditional values and new technology meet at the crossroads. Two fossil-fueled electric generation plants employ more than 400 people. On the cutting edge of technology, a data communications earth station is located near St. Johns. St. Johns serves as the Apache County seat and center of government activities, providing employment for more than 300 people.



Map 2-7: St. Johns Land Ownership

SECTION 3: PLANNING PROCESS

3.1 Primary Points of Contact

Table 3-1: Primary Points of Contact			
Jurisdiction	**Name**	**Department / Position**	**Email**
Apache County	Brannon Eagar	Sheriff's Office Chief Deputy Emergency Management Director	beagar@co.apache.az.us
Eagar	Bruce Ray	Interim City Manager	b.ray@eagaraz.gov
Springerville	Steve West	Town Manager	swest@springervilleaz.gov
St. Johns	Paul Ramsey	Interim City Manager	pramsey@sjaz.us

3.2 Planning Team and Activities

Apache County identified potential members for the Planning Team and extended invitations to all incorporated communities within the County, specifically to the individuals involved in the previous planning process. Others invited are listed later in this section. The participating members of the Planning Team are listed below with returning planning team members in bold print.

Table 3-2: Planning Team	
Name Title	**Jurisdiction / Organization**
Brannon Eagar Emergency Mgmt Director	Apache County
Beverly Parks Emergency Manager	Apache County
Doyel Shamley Board of Supervisors Member	Apache County
Shane Bevington EM Coordinator	Apache County
Ferrin Crosby Engineer	Apache County
Justin Lee Engineering Dept / Aide	Apache County
Tammi Jo Wilkins PHEP Admin Coordinator	Apache County
Kerry Pena PHEP Manager	Apache County
Frank Adams Fire Chief	Eagar
Jeremiah Loyd Community Development	Eagar
Mike Norman Asst Fire Chief	Eagar
Bruce Ray Interim Town Manager	Eagar
Max Sadler Fire Chief	Springerville

Table 3-2: Planning Team	
Name Title	**Jurisdiction / Organization**
Jason Kirk Asst Fire Chief	St Johns
Mark Prein Sr. Environmental Scientist	Salt River Project
Robert Toy Project Engineer	Consulting Firm
Susan Austin Planning Branch Manager	AZ Dept of Emergency & Military Affairs
Scott Ogden Consultant	JE Fuller

After the first Planning Team meeting on February 1, 2017 additional agencies/organizations were invited to participate in the planning process, those invited included but was not limited to all area fire depts./districts; the Depts. of Environmental Quality, Corrections, and Transportation; Navopache Electric Coop; area schools and hospitals; and Forest Service.

Three more meetings occurred during the Plan review and update process to assist the communities in reviewing the Plan and updating the risk assessment. Meeting documentation is provided in the Plan's Appendix.

Formal Local Planning Teams were not utilized however the Planning Team reached out to others to gather updated data and information and determine how to best represent their jurisdiction in this Plan, those individuals included but were not limited to:

Table 3-3: Local Planning Resources		
Name Title	**Jurisdiction Agency/Dept/Division**	**Role/Contribution**
Joni Hogle Technology Admin	Apache County	IT for posting on county website
Byron James Community Liaison	Apache County	Input from ADEQ
Trudy Balcom Reporter, White Mtn Independent	Apache County	White Mountain Independent for article in newspaper
Elecia Henderson Admin	Eagar	Collection of Information
Katie Bradey Admin	Eagar	Collection of Information
Mike Sweetser Police Chief	Eagar	Collection of Information
Tim Rassmusen Public Works Director	Springerville	Local risk assessment
Mike Nuttall Police Chief	Springerville	Safety assessment
Scott Burrell I.T. Coordinator	Springerville	I.T. Tech and website postings
Paul Ramsey	St Johns	Risk assessments, plans development

City Manager		
Gary Liston Fire Chief	St Johns	Collection of Information
Jeff Carpenter Public Works	St Johns	Collection of Information

3.3 Public and Stakeholder Outreach/Involvement

Public outreach for the planning process was encouraged cooperatively among the participating jurisdictions throughout the course of the planning process. The participating jurisdictions posted a notice to their respective websites announcing the commencement of the planning process and provided a point of contact for more information, comments, and questions. The local jurisdictions also provided a link to the County website were the previous plan could be accessed and comments could be submitted. No questions, concerns, or responses were received from the first round of notices.

The post-draft public outreach included the website notices being updated to announce the completion of the Plan draft, the updated plan draft and a link to provide comments or questions. In addition to keeping the community aware of the planning efforts, the jurisdictions also took steps to keep the aware of and educated on hazard and mitigation related topics. Below is a sampling of the ways this occurred over the last five years.

Table 3-4: Past Public and Stakeholder Outreach/Involvement

Jurisdiction	Activities
Apache Co	• Maintained the EM website with information on fire, flood, winter weather preparedness, 72 hour preparedness along with copies of the Apache Co Fire Ordinance and Fire Restrictions Definition. Web links to the 311info, Red Cross, AzEIN and FEMA are also provided. • Conducted two LEPC meetings a year. • Participated in Town meetings on Preparedness for hazards. These meetings were hosted by the local Fire Departments in Eagar and Nutrioso with the public and local jurisdictions in attendance. • Sent out monthly newsletters with information on emergency preparedness, fire prevention, winter storm preparedness, flood preparedness, health information. The newsletters are emailed to members of the public who have signed up to receive them, along to the Board of Supervisors and the County Manager. Copies are also provided to the public at the Co Health Dept. • Maintained 311info website, Facebook, & twitter to push hazard information out. • Participated once a year in the Apache County Fair by having a booth and handing out information booklets on emergency preparedness and flyers with information on how to sign up for the Mass Notification System. • Held meetings with Stakeholders involving EM, Public Health, First Responders, and local jurisdictions. These meetings are held prior to the wildland fire season and the winter storm season. These meetings provided information on what each jurisdiction is doing or had done to prepare for the upcoming fire/winter season. • Met with Navajo Nation EM to assist them in their preparedness outreach on signing up with the Mass Notification System in both Apache and Navajo County, and emergency preparedness for the citizens. The meetings also helped coordinate response efforts with the Navajo Nation EM Director for the fire and winter seasons in the event of a disaster.

Table 3-4: Past Public and Stakeholder Outreach/Involvement	
Jurisdiction	**Activities**
Eagar	• Displayed the Fire Wise model at The Eagar Town Hall and Fire Department. • Provided the Schools and other community organization with information and education during Fire Prevention week held in October. • Police department provided school programs as needed. • Provided information and updates to the Town Council, Planning and Zoning and other boards and committees meetings. • Published an initial Public Notice for the Water Canyon Flood Control project in the White Mountain Independent on 8/22/2014 and final notice on 3/17/2015. • Published an initial Public Notices for the School Bus Rd Flood Control project in the White Mountain Independent on 8/30/2016 and final notice on 12/20/2016. • Published a Public Notice for the Lesueur Drive Flood Control project in the White Mountain Independent on 7/1/2011. • Utilized social media outreach regarding hazard mitigation projects.
St. Johns	• Public monthly Town Council meetings were held and included discussions regarding the current Town plans and various types of improvements that could be done by applying for grant funding from outside sources. • Monthly newsletters were emailed to citizens who sign up for them and copies are made available at the Town Hall. The newsletters provide information on activities that are occurring in the city, announcements advising of upcoming EM Preparedness Fairs, and information on Fire Restriction Stages.
Springerville	• Community involvement during 4th of July events Every year, the White Mountains have many tourists visit the area during 4th of July holiday. Springerville takes this opportunity to coordinate the events that are occurring by working with other jurisdictions to coordinate parades, rodeos, and the many vendors that come into the area. We also push public education and awareness about being Fire Wise with campfires, and notify the public about current fire restrictions by Public Service Announcements and electric signs • Fire Prevention week held annually during the month of October. • The Springerville Fire Dept goes to the local schools grades K-2nd once a year to provide educational lessons to the students teaching about fire prevention, and educating them on how they can be fire wise. The students are given booklets with information on fire prevention and how to be fire wise, to share with parents and coloring books for their participation. • The Town of Springerville does yearly building safety checks on all government buildings. This is to ensure compliance with fire exists, evacuation routes. Some of the buildings, such as the Springerville Town Hall are located in Historic buildings. By making sure the offices are in compliance, helps ensure the safety of the building. • In the Springerville Town Hall, is located a museum that has photos and memorabilia of Springerville's historic past. Also located in the Town Hall is a large bulletin board that is used as an education component for the visitors. Depending upon the season, the board will be updated with information that is fitting to the season. For example; during wildland season, information is posted regarding how to be Fire Wise. Informational flyers are made available to the public that has tips on fire prevention, how to be fire wise, tips on cutting back trees and getting rid of dead vegetation around their homes. During winter season, tips are made about the importance of being careful with lights and woodstoves around live Christmas trees, and other winter safety tips. • The Springerville Town Council is advised by the Fire Chief before each wildland fire season of the current information regarding weather, and fire conditions for the area. During Fire Season, they are given information regarding Fire Restrictions Stages and Red Flag Warnings. This information is vital for the Board members as they must vote to enter into Fire Stages and to issue No Burn Days. This also ensures that a unified effort with other jurisdictions is being made.

3.4 Reference Documents and Technical Resources

Over the course of the update process, other plans, studies, reports, and technical information were reviewed for incorporation or reference purposes. The majority of sources referenced and researched pertain to the risk assessment and the capabilities assessment. To a lesser extent, the community descriptions and mitigation strategy also included some document or technical information research. Providing this information may also assist the jurisdictions in determining where the updated plan may be incorporated. Below is a reference listing of the primary documents and technical resources reviewed and used in the Plan.

Table 3-5: Resources Used in Plan Update/Process

Resource	Resource Type	Description of Reference and Its Use
AZ Department of Emergency and Military Affairs	Data and Planning Resource	Resource for state and federal disaster declaration information for Arizona. Also a resource for hazard mitigation planning guidance and documents.
Arizona State Land Department	Data Source	Source for statewide GIS coverage (ALRIS) and statewide wildfire hazard profile information (Division of Forestry). Used in the risk assessment.
Arizona Wildland Urban Interface Assessment	Report	Source of wildfire hazard profile data and urban interface at risk communities. Used in the risk assessment.
Apache County GIS	GIS Data	Source for county-wide GIS data and asset inventory data. Used for maps and risk assessment.
Apache County Community Wildfire Protection Plan	Community Wildfire Protection Plan	Source of wildfire hazard profile data for hazard mapping and risk assessment
Federal Emergency Management Agency	Technical and Planning Resource	Resource for HMP guidance (How-To series), floodplain and flooding related NFIP data (mapping, repetitive loss, NFIP statistics), and historic hazard incidents. Used in the risk assessment and mitigation strategy.
HAZUS-MH	Technical Resource	Based data sets within the program were used in the vulnerability analysis.
National Climatic Data Center	Technical Resource	Online resource for weather related data and historic hazard event data. Used in the risk assessment.
National Inventory of Dams	Technical Resource	Database used in the dam failure hazard profiling. Used in the risk assessment.
National Weather Service	Technical Resource	Source for hazard information, data sets, and historic event records. Used in the risk assessment.
National Wildfire Coordination Group	Technical Resource	Source for historic wildfire hazard information. Used in the risk assessment.
Office of the State Climatologist for Arizona	Website Reference	Reference for weather characteristics for the county. Used for community description.
Town of Eagar	Flood Data	Source for current floodplain information and LOMA areas.
USACE Flood Damage Report	Technical Data	Source of historic flood damages for 1978 flood. Used in the risk assessment.
USACE Flood Damage Report	Technical Data	Source of historic flood damages for 1993 flood. Used in the risk assessment.
U.S. Forest Service	Technical Data	Source for local wildfire data. Used in the risk assessment.
U.S. Geological Survey	Technical Data	Source for geological hazard data and incident data. Used in the risk assessment.
Western Regional Climate Center	Website Data	Online resource for climate data used in climate discussion of Section 4
World Wildlife Fund	GIS Data	Terrestrial ecoregions database used in the general county description.

SECTION 4: HAZARD IDENTIFICATION/RISK ASSESSMENT

This section documents the identification, profiling, and assessing the vulnerability of the hazards that affect Apache County. It describes previous occurrences and the likelihood and potential severity of future occurrences. The steps in the process are:

The risk assessment for Apache County and its respective jurisdictions was performed using a county-wide, multi-jurisdictional perspective. This approach was employed because many hazard events are likely to affect numerous jurisdictions within the County, and are not often relegated to a single jurisdictional boundary. The vulnerability analysis was performed in a way such that the results reflect vulnerability at an individual jurisdictional level, and at a countywide level.

4.1 Hazard Identification

The Planning Team reviewed the 2011 Plan hazards with the goal of refining the list to reflect the greatest risk to the jurisdictions represented by this Plan.

The review included an evaluation of the listed hazards based on the following considerations:

- Experiential knowledge of the Planning Team regarding the risk associated with the hazard
- Historic damages and losses associated with past events
- Duplication of effects attributed to each hazard

In the initial screening process the historic hazard database was reviewed and updated to reflect current. If a hazard is not listed, there were no events reported for that hazard during that time period.

Table 4-1: Declared Events That Included Apache Co, Sept 1970-Nov 2016

Hazard	Events That Included Apache Co Sept 1970 – April 2017		
	No. of Events	Total Expenditures	
		State	Federal
Flooding / Flash Flooding	8	$35,907,377	$313,926,391
Severe Wind	0	$0	$0
Wildfire	18	$5,916,649	$2,744,157
Winter Storm	6	$4,738,212	$14,210,904

NOTES: Damage Costs are reported as is and no attempt has been made to adjust costs to current dollar values.
- Only a portion of the reported expenditures were spent in the subject county.
Sources: DEMA, 2017, USDA, 2017 and FEMA, 2017

The Planning Team selected the following list of hazards for profiling and updating based on the above explanations and screening process:

- **Flooding/Flash Flooding**
- **Severe Wind**
- **Wildfire**
- **Winter Storm**

4.2 Vulnerability Analysis

The following sections summarize the methodologies used to perform the vulnerability analysis portion of the risk assessment. For this update, the vulnerability analysis was either revised or updated to reflect the availability of new data and/or differing loss estimation methodology.

Hazard profile maps were developed for Flood, Severe Wind, Wildfire, and Winter Storm to map the geographic variability of the probability and magnitude risk of the hazards as estimated by the planning team. Hazard profile categories such as High, Medium, Low, etc., were used and were subjectively assigned based on the factors discussed in Probability and Magnitude sections below. Within the context of the county limits, some hazards do not exhibit significant geographic variability and will not be categorized as such.

Unless otherwise specified, the general cutoff date for historic or hazard profile data is April 2017.

The Changing Climate

In recent years, FEMA and others have begun to take a harder look at the impacts of climate change on natural hazards and the mitigation planning process. In March 2015, FEMA released new state mitigation planning guidance that will require all state hazard mitigation plans to address climate change beginning with all updates submitted after March 2016[4]. FEMA's National Advisory Council noted that the effects of climate change could manifest as a "threat multiplier". When considering probabilities of hazard events, it is typical to make the implicit assumption that the past is a prologue for the future; however, trending changes to climate related variables may require broader thinking and projections to develop mitigation actions and projects that account for those changes.

The scope and severity of cause and impacts relating to climate change are still difficult to predict and highly debated. There is, however, a growing body of science and research that indicates a few noticeable trends that should be considered when evaluating natural hazard vulnerability and risk. In 1989, the U.S. Global Change Research Program (USGCRP) was established by Presidential Initiative and later mandated by Congress in the Global Change Research Act of 1990 with the stated purpose of assisting "the Nation and the world to understand, assess, predict, and respond to human-induced and natural processes of global change." In May 2014, the USGCRP released the 3rd National Climate Assessment (NCA), which is a comprehensive compilation of the latest body of work and science on the topic of climate change. The NCA results and discussion are divided into regions to focus the discussions and conclusions to a regional perspective. The Southwest region includes the states of Arizona, California, Colorado, Nevada, New Mexico, and Utah. According to Chapter 20 of the NCA[5], the Southwest regional climate change impacts noted in the recent research include increased heat, drought, and insect outbreaks that result in more wildfires, declining water supplies, reduced agricultural yields, health impacts in cities due to heat, and flooding and erosion in coastal areas. In its 2014 report, the NCA released the following "Key Messages" for the Southwest Region:

1. Snowpack and stream flow amounts are projected to decline in parts of the Southwest, decreasing surface water supply reliability for cities, agriculture, and ecosystems. The Southwest produces more than half of the nation's high-value specialty crops, which are irrigation-dependent and particularly vulnerable to extremes of moisture, cold, and heat. Reduced yields from increasing temperatures and increasing competition for scarce water supplies will displace jobs in some rural communities.

[4] FEMA, 2015, *State Mitigation Plan Review Guide,* released March 2015, effective March 2016, FP 302-094-2

[5] Garfin, G., G. Franco, H. Blanco, A. Comrie, P. Gonzalez, T. Piechota, R. Smyth, and R. Waskom, 2014, *Ch. 20: Southwest. Climate Change Impacts in the United States: The Third National Climate Assessment*, J. M. Melillo, Terese (T.C.) Richmond, and G. W. Yohe, Eds., U.S. Global Change Research Program, 462-486. doi:10.7930/J08G8HMN

2. Increased warming, drought, and insect outbreaks, all caused by or linked to climate change, have increased wildfires and impacts to people and ecosystems in the Southwest. Fire models project more wildfire and increased risks to communities across extensive areas.
3. Flooding and erosion in coastal areas are already occurring even at existing sea levels and damaging some California coastal areas during storms and extreme high tides. Sea level rise is projected to increase as Earth continues to warm, resulting in major damage as wind-driven waves ride upon higher seas and reach farther inland.
4. Projected regional temperature increases, combined with the way cities amplify heat, will pose increased threats and costs to public health in southwestern cities, which are home to more than 90% of the region's population. Disruptions to urban electricity and water supplies will exacerbate these health problems.

Calculated Priority Risk Index Evaluation

The Planning Team assessed the perceived overall risk for the plan hazards using the Calculated Priority Risk Index (CPRI). The CPRI value is obtained by assigning varying degrees of risk to categories for each hazard, and then calculating an index value based on a weighting scheme. Table 4-3 summarizes the CPRI risk categories and provides guidance regarding the assignment of values and weighting factors for each category.

Table 4-2: CPRI Categories and Risk Levels

CPRI Category	Degree of Risk			Assigned Weighting Factor
	Level ID	Description	Index Value	
Probability	Unlikely	▪ Extremely rare with no documented history of occurrences or events. ▪ Annual probability of less than 0.001.	1	45%
	Possible	▪ Rare occurrences with at least one documented or anecdotal historic event. ▪ Annual probability that is between 0.01 and 0.001.	2	
	Likely	▪ Occasional occurrences with at least two or more documented historic events. ▪ Annual probability that is between 0.1 and 0.01.	3	
	Highly Likely	▪ Frequent events with a well documented history of occurrence. ▪ Annual probability that is greater than 0.1.	4	
Magnitude/ Severity	Negligible	▪ Negligible property damages (less than 5% of critical and non-critical facilities and infrastructure). ▪ Injuries or illnesses are treatable with first aid and there are no deaths. ▪ Negligible quality of life lost. ▪ Shut down of critical facilities for less than 24 hours.	1	30%
	Limited	▪ Slight property damages (greater than 5% and less than 25% of critical and non-critical facilities and infrastructure). ▪ Injuries or illnesses do not result in permanent disability and there are no deaths. ▪ Moderate quality of life lost. ▪ Shut down of critical facilities for more than 1 day and less than 1 week.	2	
	Critical	▪ Moderate property damages (greater than 25% and less than 50% of critical and non-critical facilities and infrastructure). ▪ Injuries or illnesses result in permanent disability and at least one death.	3	

		▪ Shut down of critical facilities for more than 1 week and less than 1 month.		
	Catastrophic	▪ Severe property damages (greater than 50% of critical and non-critical facilities and infrastructure). ▪ Injuries or illnesses result in permanent disability and multiple deaths. ▪ Shut down of critical facilities for more than 1 month.	4	
Warning Time	Less than 6 hours	Self explanatory.	4	15%
	6 to 12 hours	Self explanatory.	3	
	12 to 24 hours	Self explanatory.	2	
	More than 24 hours	Self explanatory.	1	
Duration	Less than 6 hours	Self explanatory.	1	10%
	Less than 24 hours	Self explanatory.	2	
	Less than one week	Self explanatory.	3	
	More than one week	Self explanatory.	4	

As an example, assume that the project team is assessing the hazard of flooding, and has decided that the following assignments best describe the flooding hazard for their community:

- Probability = Likely
- Magnitude/Severity = Critical
- Warning Time = 12 to 24 hours
- Duration = Less than 6 hours

The CPRI for the flooding hazard would then be: CPRI = [(3*0.45) + (3*0.30) + (2*0.15) + (1*0.10)] CPRI = 2.65 (max 4.00)

Critical Facilities and Infrastructure Asset Inventory

For the purpose of this Plan, assets are defined as any natural or human-caused feature that has value, including, but not limited to people; buildings; infrastructure like bridges, roads, and sewer and water systems; lifelines like electricity and communication resources; or environmental, cultural, or recreational features like parks, dunes, wetlands, or landmarks.

Critical facilities and infrastructure (CFI) are systems, structures and infrastructure within a community whose incapacity or destruction would have a debilitating impact on the defense or economic security of that community, significantly hinder a community's ability to recover following a disaster. The following the criteria was used to define critical facilities and infrastructure for this Plan:

1. **Communications Infrastructure:** Telephone, cell phone, data services, radio towers, and internet communications, which have become essential to continuity of business, industry, government, and military operations.
2. **Electrical Power Systems:** Generation stations and transmission and distribution networks that create and supply electricity to end-users.
3. **Gas and Oil Facilities:** Production and holding facilities for natural gas, crude and refined petroleum, and petroleum-derived fuels, as well as the refining and processing facilities for these fuels.
4. **Banking and Finance Institutions:** Banks, financial service companies, payment systems, investment companies, and securities/commodities exchanges.

5. **Transportation Networks:** Highways, railroads, ports and inland waterways, pipelines, and airports and airways that facilitate the efficient movement of goods and people.
6. **Water Supply Systems:** Sources of water; reservoirs and holding facilities; aqueducts and other transport systems; filtration, cleaning, and treatment systems; pipelines; cooling systems; and other delivery mechanisms that provide for domestic and industrial applications, including systems for dealing with water runoff, wastewater, and firefighting.
7. **Government Services:** Capabilities at the federal, state, and local levels of government required to meet the needs for essential services to the public.
8. **Emergency Services:** Medical, police, fire, and rescue systems.

Other assets such as public libraries, schools, businesses, museums, parks, recreational facilities, historic buildings or sites, churches, residential and/or commercial subdivisions, apartment complexes, and so forth, are typically not classified as CFI unless they serve a secondary function to the community during a disaster emergency (e.g. - emergency housing or evacuation centers).

As a part of the update process, each community reviewed their respective 2011 Plan asset list. New facilities were added/deleted as appropriate and available. Each community made needed changes to the geographic position, revision of asset names, updating replacement costs, etc. to bring the dataset into a current condition. The updated asset inventory is attributed with a descriptive name, physical address, geospatial position, and an estimated building/structure and contents replacement cost for each entry to the greatest extent possible and entered into a GIS geodatabase.

The 2011 Plan used a combination of the Asset Inventory and HAZUS®-MH[6] general building stock data to represent the CFI and general residential, commercial and industrial buildings. The same HAZUS files were also used to estimate population statistics. Tools used by the Local Planning Team for the update included GIS data sets, on-line mapping utilities, insurance pool information, county assessors data, and manual data acquisition. Table 4-4 summarizes the facility counts provided by each of the participating jurisdictions in this Plan.

It should be noted that the facility counts summarized do not represent a comprehensive inventory of all the category facilities that exist within the county. They do represent the facilities inventoried to-date by each jurisdiction and are considered to be a work-in-progress that is to be expanded and augmented with each Plan cycle.

Table 4-3: Asset Inventory as of March 2017

	Communications Infrastructure	Electrical Power Systems	Gas and Oil Facilities	Banking and Finance Institutions	Transportation Networks	Water Supply Systems	Government Services	Emergency Services	Educational [a]	Cultural [a]	Business [a]	Flood Control [a]
County-Wide Totals	33	4	9	6	54	40	22	29	6	1	7	4
Eagar	15	1	0	2	35	16	6	6	0	0	4	0
St. Johns	4	0	4	1	7	15	6	5	1	1	3	0

[6] U.S. Department of Homeland Security, Federal Emergency Management Agency, HAZUS®-MH.

Table 4-3: Asset Inventory as of March 2017

	Communications Infrastructure	Electrical Power Systems	Gas and Oil Facilities	Banking and Finance Institutions	Transportation Networks	Water Supply Systems	Government Services	Emergency Services	Educational [a]	Cultural [a]	Business [a]	Flood Control [a]
Springerville	4	1	4	2	4	8	3	5	0	0	0	0
Unincorporated Apache County	10	2	1	1	8	1	7	13	5	0	0	4

Note: Assets listed have been determined to be treated as critical per the definition of this Plan by the corresponding jurisdiction.

Loss Estimations

In the 2011 Plan, losses, when estimated, were done so by either quantitative or qualitative methods. Quantitative methods consisted of intersecting hazard map layers with the asset inventory map layer and the HAZUS®-MH map layer. Other quantitative methods included statistical methods based on historic data. The loss estimates presented in this Plan, have been updated to reflect the current hazard map layers and CFI asset databases using the procedures discussed below.

Economic loss and human exposure estimates for each of the final hazards identified in Section 4.1 begins with an assessment of the potential exposure of CFI assets, general building stock, and human populations to those hazards. Exposure estimates of CFI assets identified by each jurisdiction are accomplished by intersecting the asset inventory with the hazard profiles in Section 4.3. General building stock and population exposures are estimated by intersecting the updated hazards with 2010 Census Data statistics that have been re-organized into GIS compatible databases and distributed with HAZUS®-MH (HAZUS).

Exposure estimates for general residential, commercial, and industrial building stock not specifically identified with the asset inventory, are also accomplished using the HAZUS database, wherein the developers of the HAZUS database have made attempts to correlate building/structure counts to census block data. Combining the exposure results from the asset inventory and the HAZUS database provides a fairly comprehensive depiction of the overall exposure of building stock and the two datasets are considered complimentary and not redundant.

Economic losses to structures and facilities are estimated by multiplying the exposed facility replacement cost estimates by an assumed loss to exposure ratio for the hazard. The loss to exposure ratios used in this Plan is summarized by hazard later in this Section. It is important to note that the loss to exposure ratios is subjective and the estimates are solely intended to provide an understanding of relative risk from the hazards and potential losses. The reality is that uncertainties are inherent in any loss estimation methodology due to:

- Incomplete scientific knowledge concerning hazards and our ability to predict their effects on the built environment;
- Approximations and simplifications that are necessary for a comprehensive analysis; and,
- Lack of detailed data necessary to implement a viable statistical approach to loss estimations.

Several of the hazards profiled in this Plan will not include quantitative exposure and loss estimates. The vulnerability of people and assets associated with some hazards are nearly impossible to evaluate given the uncertainty associated with where these hazards will occur as well as the relatively limited focus and extent of damage. Instead, a qualitative review of vulnerability will be discussed to provide insight to the nature of losses that are associated with the hazard.

4.3 Hazard Risk Profiles

The following sections make up the risk profiles for each hazard identified in Section 4.1. The following elements are addressed to present the overall risk profile:

- **Description**
- **History**
- **Probability and Magnitude**
- **Climate Change Impacts**
- **Vulnerability**
- **Sources**
- **Profile Maps (if applicable)**

4.3.1 Flood / Flash Flood

Description

For the purpose of this Plan, the hazard of flooding will pertain to floods that result from precipitation/runoff related events. Other flooding due to dam or levee failures is addressed separately. The three seasonal atmospheric events that tend to trigger floods in Apache County are:

- *Tropical Storm Remnants*: Some of the worst flooding tends to occur when the remnants of a hurricane that has been downgraded to a tropical storm or tropical depression enter the State. These events occur infrequently and mostly in the early autumn and usually bring heavy and intense precipitation over large regions causing severe flooding.
- *Winter Rains*: Winter brings the threat of low intensity; but long duration rains covering large areas that cause extensive flooding and erosion, particularly when combined with snowmelt.
- *Summer Monsoons*: A third atmospheric condition that brings flooding to Arizona is the annual summer monsoon. In mid to late summer the monsoon winds bring humid subtropical air into the State. Solar heating triggers afternoon and evening thunderstorms that can produce extremely intense, short duration bursts of rainfall. The thunderstorm rains are mostly translated into runoff and in some instances, the accumulation of runoff occurs very quickly resulting in a rapidly moving flood wave referred to as a flash flood. Flash floods tend to be much localized and cause significant flooding of local watercourses.

Damaging floods in the County include riverine, sheet, alluvial fan, and local area flooding. Riverine flooding occurs along established watercourses when the bankfull capacity of a watercourse is exceeded by storm runoff or snowmelt and the overbank areas become inundated. Sheet flooding occurs in regionally low areas with little topographic relief that generate floodplains over a mile wide. Alluvial fan flooding is generally located on piedmont areas near the base of the local mountains and is characterized by multiple, highly unstable flowpaths that can rapidly change during flooding events. Local area flooding is often the result of poorly designed or planned development wherein natural flowpaths are altered, blocked or obliterated, and localized ponding and conveyance problems result. Erosion is also often associated with damages due to flooding.

Another major flood hazard comes as a secondary impact of wildfires in the form of dramatically increased runoff from ordinary rainfall events that occur on newly burned watersheds. Denuding of the vegetative canopy and forest floor vegetation, and development of hydrophobic soils are the primary factors that contribute to the increased runoff. Canopy and floor level brushes and grasses intercept and store a significant volume of rainfall during a storm event. They also add to the overall watershed roughness which generally attenuates the ultimate peak discharges. Soils in a wildfire burn area can be rendered hydrophobic, which according the NRCS is the development of a thin layer of nearly impervious soil at or below the mineral soil surface that is the result of a waxy substance derived from plant material burned during a hot fire. The waxy substance penetrates into the soil as a gas and solidifies after it cools, forming a waxy coating around soil particles. Hydrophobic soils, in combination with a denuded watershed, will significantly increase the runoff potential, turning a routine annual rainfall event into a raging flood with drastically increased potential for soil erosion and mud and debris flows.

History

Flooding is clearly a major hazard in Apache County resulting in being a part of 8 state and federal disaster declarations for flooding. There have been at least 21 other non-declared events of reported flooding incidents that had some affect on the County. Nine of the reported events occurred during the 2011-2016 Plan cycle, with eight being attributed to post Wallow Fire flooding. The following incidents represent examples of major flooding that has impacted the County:

- September 2013 – Thunderstorms produced heavy rain and flooding across the Navajo Nation and the northern portion of Apache County. Close to 50 families were displace across the Navajo Nation in Apache County because of the flash flooding and part of the Navajo Zoo was inundated with water. Event losses were estimated at over $100,000 and the State of Arizona issued a disaster declaration.

- July-August 2011 – Moderate to heavy rain from thunderstorms centered over various areas of the Wallow Fire burn areas produced flash flooding and mudslides around Alpine, Greer, Nutrioso, and other areas. Many federal and state highways, county roads, and private roads were impacted with flooding, mud and debris. Multiple public and private structures were impacted by the flooding and debris flow. Losses estimated by NCDC exceeded $251,000; however mitigation and repair costs by public and private entities are estimated to be nearly one-million of dollars. (NCDC, 2017; DEMA, 2017)

- September 2002, ADOT reported flooding over Indian Route 15 in four places between Cornfield and Burnside. Pooling of water was reported in flat places on State Hwy 191 and on State Route 264 between milepost 440 and 441. Hwy 61 flooded near St Johns. Flooding made Indian Route 59 near Rough Rock impassible. The Chinle Police Dept reported flooding along the Chinle Wash from the confluence of the Canyon de Chelly Wash northward to Rock Point. People were evacuated as flood waters threatened homes along the Chinle Wash. One mobile home was washed off its foundations. Additional flooding was reported over the bridge on Nazlini Creek near Chinle. Heavy rain caused street flooding and road closures in St. Johns and Snowflake. Route 77 to Snowflake was closed due to flooding. Flooding was also reported on Route 191 near St. Johns. (Apache Co, 2006).

- August 1996, heavy thunderstorms combined with rain with small hail flooded several dirt county roads, causing mud and water to wash across main roads in Greer. (Apache Co, 2006).

- January and February 1993, winter rain flooding damage occurred from winter storms associated with the El Nino phenomenon. These storms flooded watersheds throughout Arizona by dumping excessive rainfall amounts that saturated soils and increased runoff. Warm temperature snowmelt exacerbated the situation over large areas. Erosion caused tremendous damage and some communities along normally dry washes were devastated. Stream flow velocities and runoff volumes exceeded historic highs. Many flood prevention channels and retention reservoirs were filled to capacity and so water was diverted to the emergency spillways or the reservoirs were breached, causing extensive damage in some cases (e.g., Painted Rock Reservoir spillway). Ultimately, the President declared a major federal disaster that freed federal funds for both public and private property losses for all of Arizona's fifteen counties. Damages were widespread and significant, impacting over 100 communities. Total public and private damages exceeded $400 million and eight deaths and 112 injuries were reported to the Red Cross (FEMA, April 1, 1993; DEMA, March, 1998).

Probability and Magnitude

For the purpose of this Plan, the probability and magnitude of flood hazards in Apache County jurisdictions are primarily based on the 1% (100-year) and 0.2% (500-year) probability floodplains delineated on FEMA Flood Insurance Rate Maps (FIRMs), plus any provisional floodplain delineations used for in-house purposes by participating jurisdictions or Planning Team delineated areas. The effective date for the effective DFIRM maps is September 28, 2007. DFIRM floodplain GIS base files were obtained from FEMA and are the basis for the flood hazard depictions in this Plan. Therefore, the vulnerability analysis results in this plan are likely conservative.

Two designations of flood hazard are used. Any zone "A" Special Flood Hazard Area (SFHA) is designated as a high hazard area. Medium flood hazard areas are all "Shaded X" zones. All "A" zones (e.g. – A, A1-99, AE, AH, AO, etc.) represent areas with a 1% probability of being flooded at a depth of one-foot or greater in any given year. All "Shaded X" zones represent areas with a 0.2% probability of being flooded at a depth of one-foot or greater in any given year. These two storms are often referred to as the 100-year and 500-year storm, respectively. High and medium hazard designations were also assigned to the non-FEMA areas by the Planning Team based on the anticipated level of flood hazard posed.

Vulnerability

Table 4-4: CPRI Rating for Flooding

Jurisdiction	Probability	Magnitude/ Severity	Warning Time	Duration	CPRI Rating
Eagar	Likely	Limited	< 6 hours	< 24 hours	2.75
Springerville	Likely	Limited	< 6 hours	< 24 hours	2.75
St. Johns	Likely	Limited	< 6 hours	< 6 hours	2.65
Unincorporated Apache Co	Likely	Limited	6 - 12 hours	< 24 hours	2.60

Loss Estimations

The estimation of potential exposure to high and medium flood hazards was accomplished by intersecting the updated human and critical facility assets with the updated flood hazard limits depicted on this profile's maps. Loss estimates to all facilities located within the high and medium flood hazard areas were made based on loss estimation tables published by FEMA (FEMA, 2001). Most of the assets located within high hazard flood areas will be subject to three feet or less of flooding. Using the FEMA tables, it is assumed that all structural assets located within the high hazard areas will have a loss-to-exposure ratio of 20%. No losses are estimated for assets located in the medium hazard areas. The following tables summarize the Planning Team identified critical facilities potentially exposed to high and medium flood hazards, and the corresponding estimates of losses. They also summarize population sectors exposed to the high and medium flood hazards. HAZUS residential, commercial and industrial exposures and loss estimates to high and medium flood hazards.

In summary, $4.7 million in asset related losses are estimated for high flood hazards, for all the participating jurisdictions in Apache County. An additional $25.3 million in high hazard flood losses to HAZUS defined residential, commercial, and industrial facilities is estimated for all participating Apache County jurisdictions. Regarding human vulnerability, a total population of 748 people, or 1.05% of the total population, is potentially exposed to a high hazard flood event. A total population of 1,399 people, or 1.96% of the total population, is potentially exposed to a medium hazard flood event. Based on the historic record, multiple deaths and injuries are plausible and a substantial portion of the exposed population is subject to displacement depending on the event magnitude.

It is duly noted that the loss and exposure numbers presented above represent a comprehensive evaluation of the County as a whole. It is unlikely that a storm event would occur that would flood all of the delineated high and medium flood hazard areas at the same time. Accordingly, actual event based losses and exposure are likely to be only a fraction of those summarized above. Furthermore, it should be noted that any flood event that exposes assets or population to a medium hazard will also expose assets and populations to the high hazard flood zone. That is, the 100-year floodplain would be entirely inundated during a 500-year flood.

Table 4-5: Asset Estimated Exposure to High & Medium Hazard Flooding

Community	Total Facilities Reported by Community	Impacted Facilities	Percentage of Total Community Facilities Impacted	Estimated Replacement Cost (x$1000)	Estimated Structure Loss (x$1000)
HIGH					
County-Wide Totals	**215**	**31**	**14.42%**	**$23,252**	**$4,650**
City of St. Johns	31	2	6.45%	$1,250	$250
Town of Eagar	85	15	17.65%	$8,752	$1,750
Town of Springerville	47	9	19.15%	$2,250	$450
Unincorporated	52	5	9.62%	$11,000	$2,200
MEDIUM					
County-Wide Totals	**215**	**17**	**7.91%**	**$35,880**	**$0**
City of St. Johns	31	0	0.00%	$0	$0
Town of Eagar	85	16	18.82%	$32,380	$0
Town of Springerville	47	0	0.00%	$0	$0
Unincorporated Co	52	1	1.92%	$3,500	$0

Table 4-6: Population Estimated Exposed to High & Medium Hazard Flooding

Community	Total Population	Population Exposed	Percent of Population Exposed	Total Population Over 65	Population Over 65 Exposed	Percent of Population Over 65 Exposed
HIGH						
County-Wide Totals	**71,501**	**748**	**1.05%**	**8,267**	**123**	**1.49%**
Eager	4,885	197	4.03%	639	32	5.05%
Springerville	1,961	60	3.05%	311	8	2.49%
St. Johns	3,480	142	4.09%	467	27	5.81%
Tribal Lands	53,702	66	0.12%	5,245	3	0.06%
Unincorporated Co	7,473	282	3.78%	1,605	52	3.26%
MEDIUM						
County-Wide Totals	**71,501**	**1,399**	**1.96%**	**8,267**	**174**	**2.10%**
Eager	4,885	1,367	27.99%	639	167	26.15%
Springerville	1,961	25	1.25%	311	5	1.69%
St. Johns	3,480	3	0.10%	467	0	0.04%
Tribal Lands	53,702	0	0.00%	5,245	0	0.00%
Unincorporated Co	7,473	4	0.05%	1,605	1	0.09%

Table 4-7: Apache County Estimated Building Exposure to Flooding

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Apache County HAZUS Summary	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Total of All Economic Impact (x$1000)	Loss-to-Exposure Ratio	Total Estimated Loss (x$1000)
County-Wide Totals	**31,423**	**$6,195,908**	**407**	**$532,085**	**74**	**$83,466**	**$6,811,459**		
High Hazard Exposure	415	$98,734	24	$24,835	4	$3,073	$126,641	20%	$25,328
Medium Hazard Exposure	591	$143,676	31	$38,785	7	$3,011	$185,472	0%	$0
Apache County HAZUS Summary	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact			
High Hazard Exposure	01.32%	01.59%	05.89%	04.67%	05.74%	03.68%			
Medium Hazard Exposure	01.88%	02.32%	07.70%	07.29%	09.07%	03.61%			

Table 4-8: Eagar Estimated Building Exposure to Flooding

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Eagar HAZUS Summary	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Total of All Economic Impact (x$1000)	Loss-to-Exposure Ratio	Total Estimated Loss (x$1000)
Community-Wide Totals	**2,029**	**$550,023**	**83**	**$81,167**	**22**	**$19,465**	**$650,655**		
High Hazard Exposure	85	$27,904	8	$6,997	1	$421	$35,322	20%	$7,064
Medium Hazard Exposure	567	$136,006	30	$34,983	7	$2,989	$173,978	0%	$0
Eagar HAZUS Summary	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact			
High Hazard Exposure	04.19%	05.07%	09.77%	08.62%	04.41%	02.16%			
Medium Hazard Exposure	27.96%	24.73%	35.75%	43.10%	30.41%	15.35%			

Table 4-9: Springerville Estimated Building Exposure to Flooding

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Springerville HAZUS Summary	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Total of All Economic Impact (x$1000)	Loss-to-Exposure Ratio	Total Estimated Loss (x$1000)
Community-Wide Totals	851	$211,640	54	$73,956	11	$7,462	$293,059		
High Hazard Exposure	24	$7,853	7	$10,126	2	$1,977	$19,956	20%	$3,991
Medium Hazard Exposure	15	$5,630	2	$3,770	0	$21	$9,421	%	$0
Springerville HAZUS Summary	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact			
High Hazard Exposure	02.79%	03.71%	12.02%	13.69%	19.25%	26.49%			
Medium Hazard Exposure	01.82%	02.66%	03.20%	05.10%	0.18%	0.29%			

Table 4-10: St. Johns Estimated Building Exposure to Flooding

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
St. Johns HAZUS Summary	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Total of All Economic Impact (x$1000)	Loss-to-Exposure Ratio	Total Estimated Loss (x$1000)
Community-Wide Totals	1,433	$338,058	65	$57,607	8	$9,096	$404,760		
High Hazard Exposure	71	$15,823	1	$265	0	$0	$16,088	20%	$3,218
Medium Hazard Exposure	2	$698	0	$29	0	$1	$727	%	$0
St. Johns HAZUS Summary	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact			
High Hazard Exposure	04.93%	04.68%	01.37%	0.46%	0.0%	0.0%			
Medium Hazard Exposure	0.16%	0.21%	0.05%	0.05%	0.0%	0.01%			

Table 4-11: Unincorporated Apache Co Estimated Building Exposure to Flooding

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		SUMMARY		
Unincorporated Apache County HAZUS Summary	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Building Count	Potential Economic Impact (x$1000)	Total of All Economic Impact (x$1000)	Loss-to-Exposure Ratio	Total Estimated Loss (x$1000)
Community-Wide Totals	6,419	$1,237,759	68	$56,374	19	$17,281	$1,311,414		
High Hazard Exposure	209	$41,856	8	$7,276	1	$675	$49,807	20%	$9,961
Medium Hazard Exposure	6	$1,341	0	$3	0	$0	$1,344	%	$0
Unincorporated Apache County HAZUS Summary	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact	% Building Count	% Potential Economic Impact			
High Hazard Exposure	03.25%	03.38%	12.03%	12.91%	06.10%	03.91%			
Medium Hazard Exposure	0.10%	0.11%	0.0%	0.01%	0.0%	0.0%			

Repetitive Loss Properties

Repetitive Loss (RL) and Severe Repetitive Loss (SRL) properties are those NFIP-insured properties that since 1978 have experienced multiple flood losses. These properties demonstrate a track record of repeated flooding for a certain location and are one element of the vulnerability analysis. These properties are also important to the NFIP, since structures that flood frequently put a strain on the National Flood Insurance Fund. FEMA records dated February 2017 indicate that there are no identified RL/SRL properties in Apache County.

National Flood Insurance Program Participation

Apache County, Eagar, Springerville, and St. Johns all participate in the NFIP at varying levels.

Table 4-12: NFIP Information

Jurisdiction	ID	NFIP Entry	Current Effective Map Date	# of Policies	Amount of Coverage (x $1,000)	Floodplain Management Role
Apache County (Unincorporated)	040001	7/5/1982	9/28/2007	16	$3,005.8	County manages floodplains for unincorporated areas and St. Johns. The County also provides floodplain mgmt assistance for Eagar and Springerville.
Eagar	040103	1/6/1982	9/28/2007	26	$5,583.1	Town manages floodplains within Town limits with assistance from the County.
Springerville	040011	6/25/1976	9/28/2007	4	$1,163.6	Town manages floodplains within Town limits with assistance from the County.
St. Johns	040010	3/30/1981	9/28/2007	4	$619	City is a county-dependent for floodplain management.

Sources: Policy Statistics - http://bsa.nfipstat.fema.gov/reports/1011.htm; NFIP Status - http://bsa.nfipstat.fema.gov/comm_status/index.html (4/13/17)

The participating jurisdictions performed an overall assessment of their participation in the NFIP program by responding to the following questions:

1. Describe your jurisdiction's current floodplain management / regulation process for construction of new or substantially improved development within your jurisdiction.
2. Describe the status and/or validity of the current floodplain hazard mapping for your jurisdiction.
3. Describe any community assistance activities (e.g. – help with obtaining Elevation Certificates, flood hazard identification assistance, flood insurance acquisition guidance, public involvement activities, etc.)
4. Describe identified needs in your floodplain management program. This could include things like updating the floodplain management code/regulation, establishing written review procedures, modifying or adding flood hazard area mapping, etc.

Responses were provided by all jurisdictions regardless of their participation status in the NFIP program. The table below summarizes the responses provided by each of the currently participating jurisdictions

Table 4-13: NFIP Program Assessment		
Jurisdiction	**Responses to Questions 1-4**	
Apache County	Q1	When a permit for a property or building comes in: • Property is reviewed to determine if it lies within a special flood hazard area • If in SFHA, then the applicant is required to obtain a Special Flood Hazard Permit
	Q2	• The county floodplain ordinance has been updated in February 2017 • DFIRMs are current and effective as of 2007 and available on GIS • Have cleared up all of the comments received during the last CAV
	Q3	• Provide floodplain determination assistance as requested • Provide information and links on the website • Provide seasonal floodplain related information via social media and newsletters • Manage the Flood Control District activities and support
	Q4	• Get the Greer floodplain delineation study completed to update the SFHA maps to better reflect the impacts of the Wallow Fire
Eagar	Q1	• Building Permit/Subdivision application reviewed for floodplain • Floodplain Use Permit process is used for development within the SFHA and a permit is issued with completion of the application • Require elevation certificate
	Q2	• Mostly valid with the exception of two new LOMRs that will be processed over the next 18 months • LOMRs are based on as-built and proposed construction for two areas within the Town
	Q3	• Provide counter assistance to identify floodplains • Provide flood insurance acquisition guidance • Public outreach activities tied to projects that modify the SFHA or DFIRMs • Provide sandbags when requested
	Q4	• Need the Water Canyon Creek and Dry Canyon Creek floodplains to be restudied and converted back to Zone AEs (the Zone AEs were changed to Zone As with the 2007 map updates. They need to be converted back)
Springerville	Q1	• Applications for building permits are reviewed for floodplain. • If the proposed improvements are located within a SFHA, the applicant is required to develop elevation certificates
	Q2	• FIRM panels are adequate
	Q3	• Provide assistance in identifying if properties are located within floodplains as requested • Provided public education materials and fliers regarding increased risk from the Wallow Fire flooding and to note the building permit process.
	Q4	• Update the Town's website to include additional floodplain information • Develop a Floodplain Use Permit process
St. Johns	Q1	• Applications that come in for building permits are referred to the county for engineering and floodplain review • All permitting and floodplain management is done by the county
	Q2	• Seem OK to the City staff • No additional mapping is needed
	Q3	• Typically, all requests for assistance are referred to the County when permitting is required • Have in the past assisted residents with obtaining elevation certificates
	Q4	• Very few floodplain management needs are ever raised. • No real need for change

Development Trends

Over the last five years, Apache County and the incorporated jurisdictions have experienced near zero growth and any development that has occurred is either infill to existing development or development outside of flood prone areas. Many of the flood prone properties in Apache County pre-date the planning jurisdictions' entry into the NFIP and were constructed prior to current floodplain management practices. The development of new properties or substantial re-development of existing structures is now subject to regulatory review procedures implemented by each jurisdiction. For substantially new development, adequate planning and regulatory tools are in place to assist residents and developers in avoiding flood risks.

Anticipated new development in the unincorporated areas of the County may include development of a helium production facility near the Navajo Generations Station rail crossing, continued infill into existing platted communities. None of the anticipated growth areas are identified to be within high flood risk areas.

Sources

AZ Division of Emergency Management, 2013, State of AZ Hazard Mitigation Plan.

FEMA, Understanding Your Risks; Identifying Hazards and Estimating Losses, Doc# 386-2.

FEMA, 2017, Map Service Center, https://msc.fema.gov/portal

2011, Apache County Multi-Jurisdictional Hazard Mitigation Plan

NOAA, National Weather Service Forecast Office – 2011, http://www.wrh.noaa.gov/twc/hydro/floodhis.php

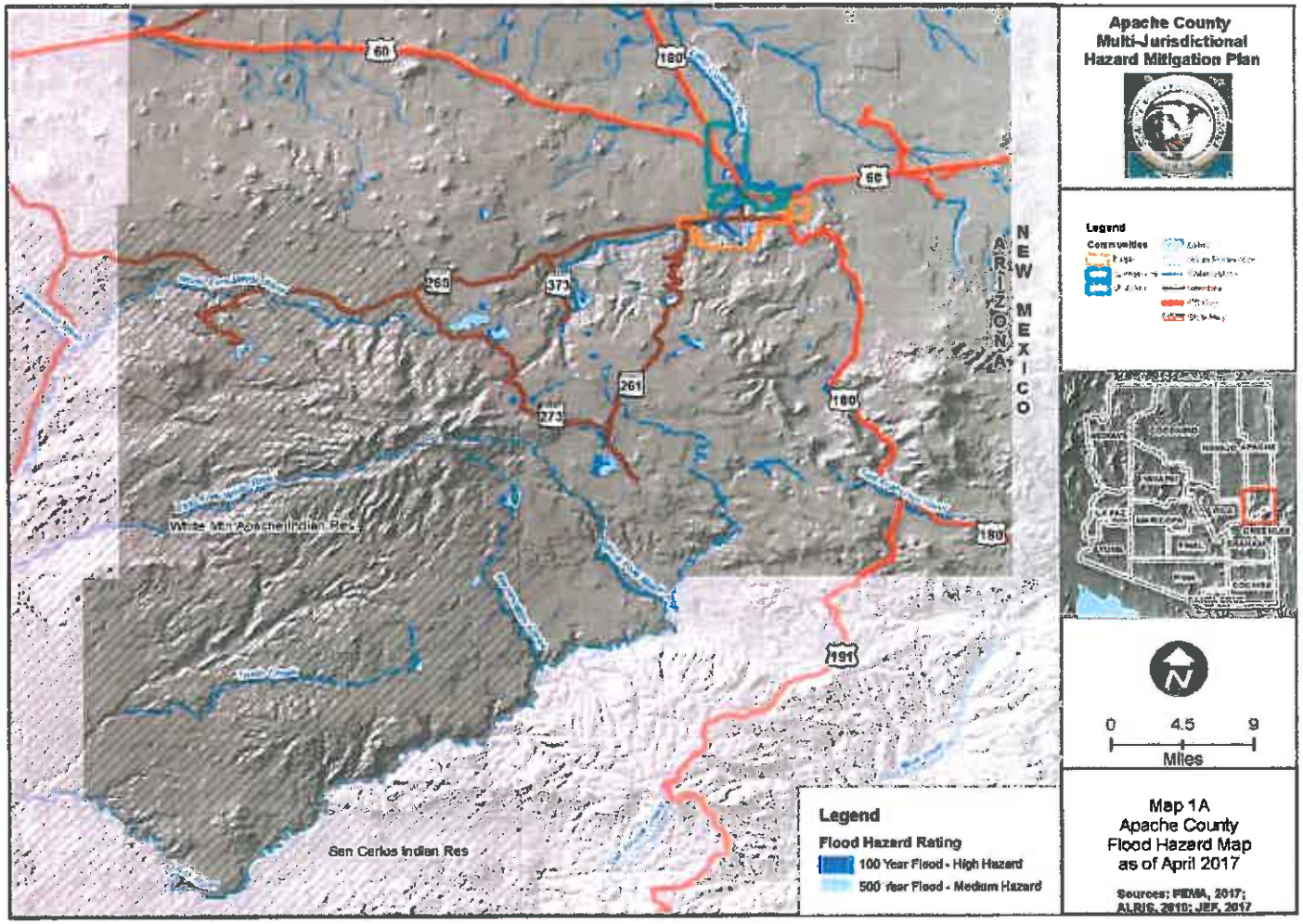
U.S. Dept of Commerce, National Climatic Data Center, 2017, Storm Events Database, http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwevent~storms

U.S. Army Corps of Engineers, Los Angeles District, 1994, Flood Damage Report, State of AZ, Floods of 1993.

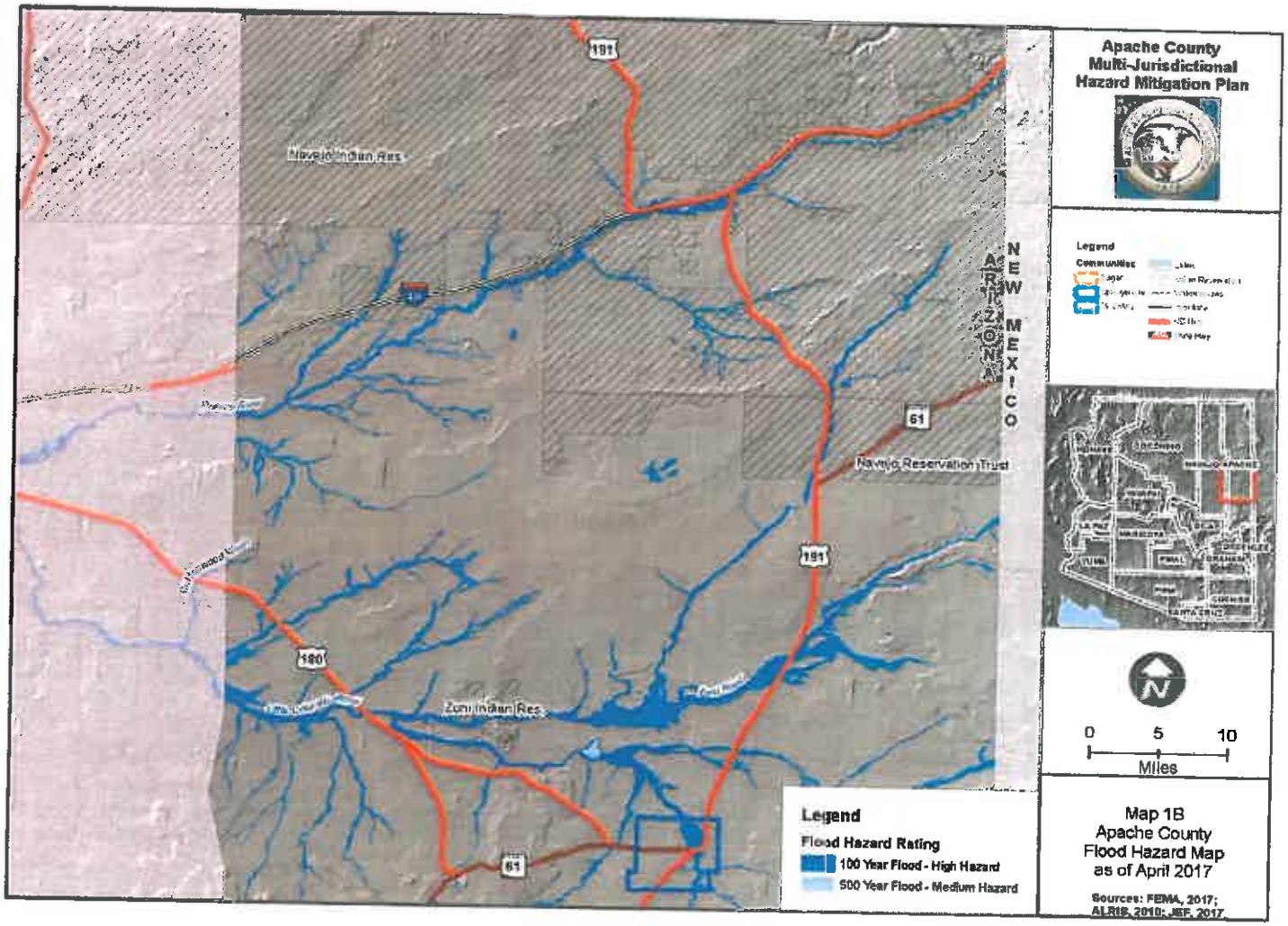
Profile Maps

County-Wide Flood Hazard Maps

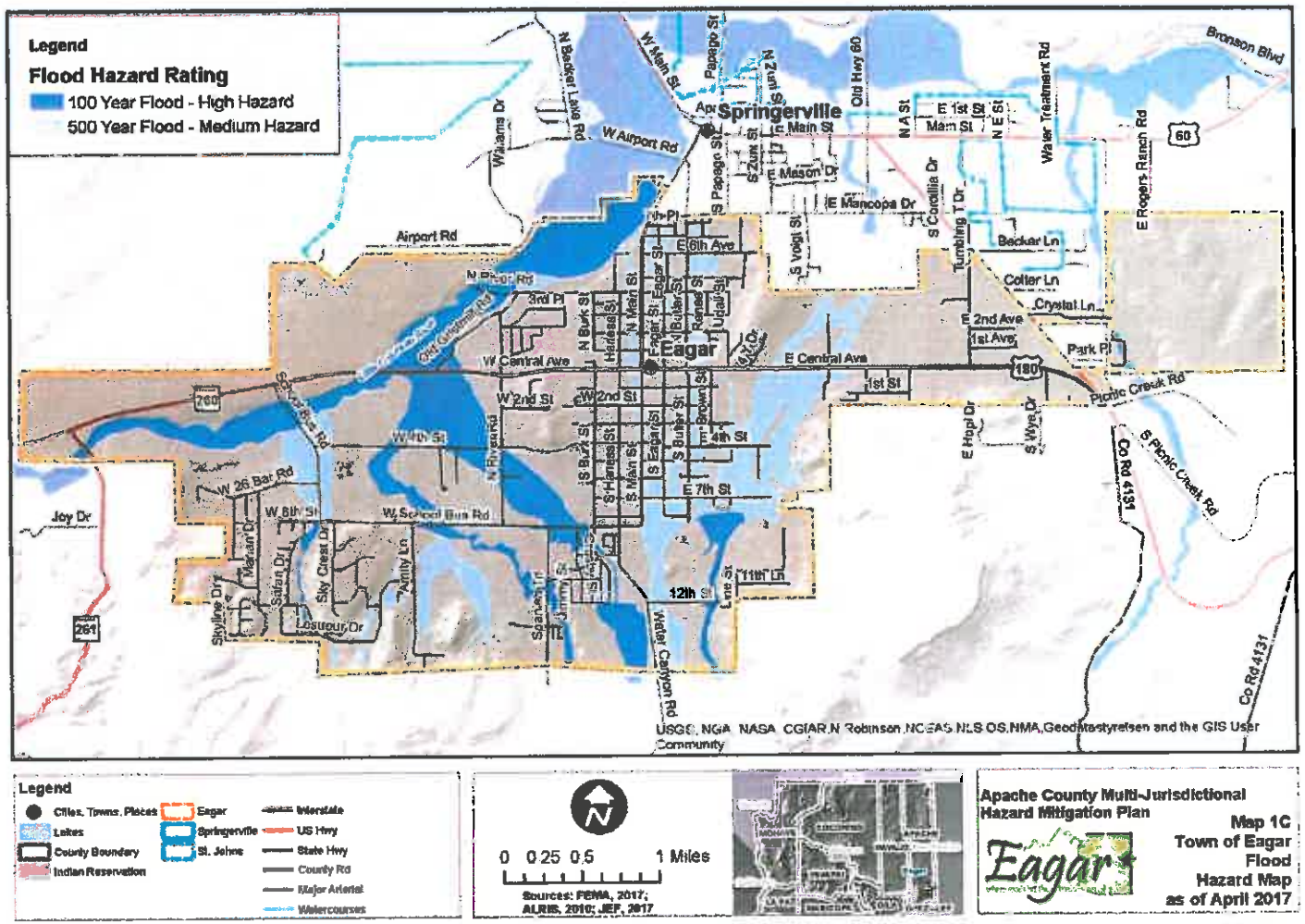
Eagar, Springerville, and St. Johns Flood Hazard Maps



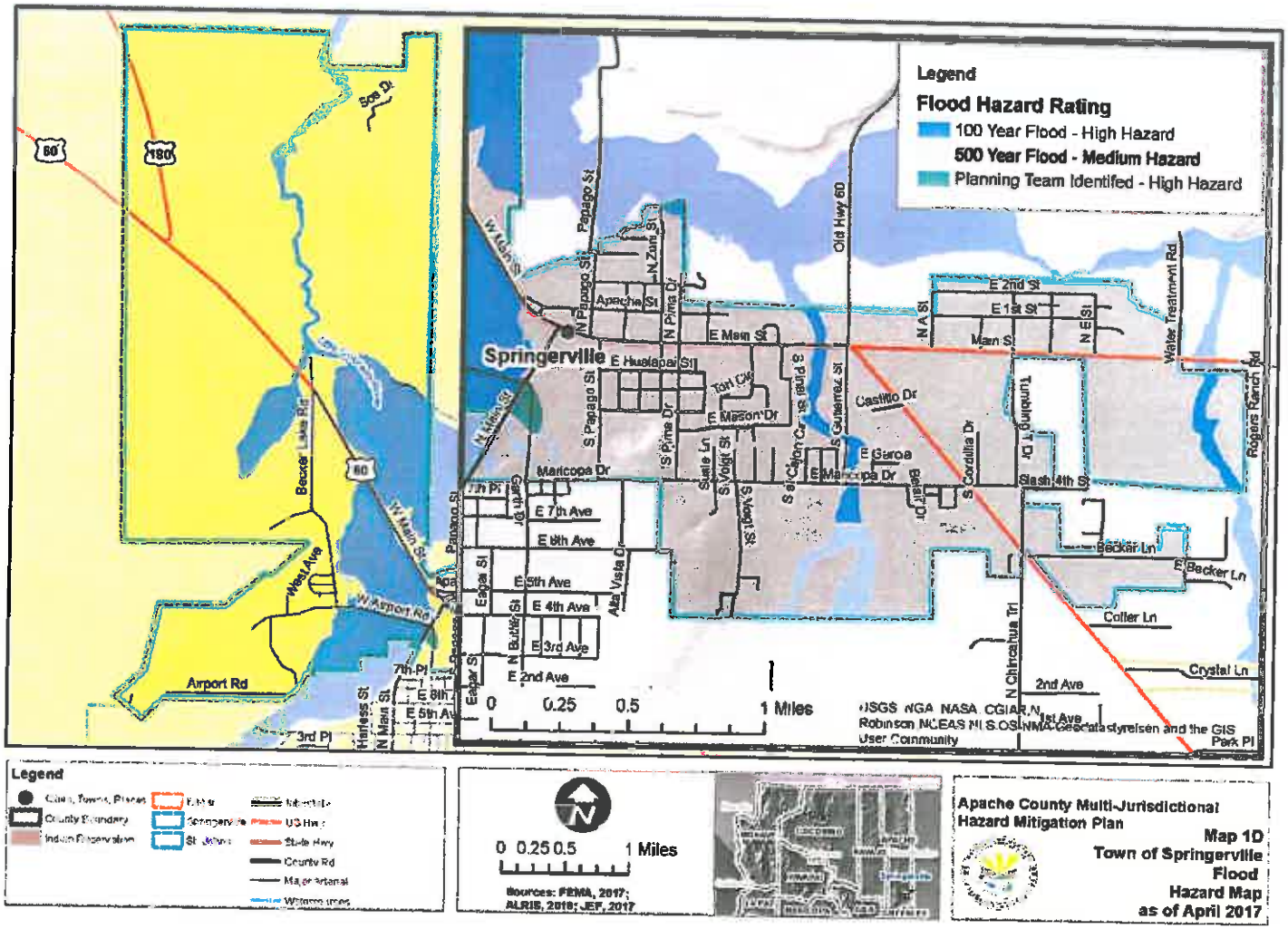
Map 4-1: Flood Hazard Area for Apache County



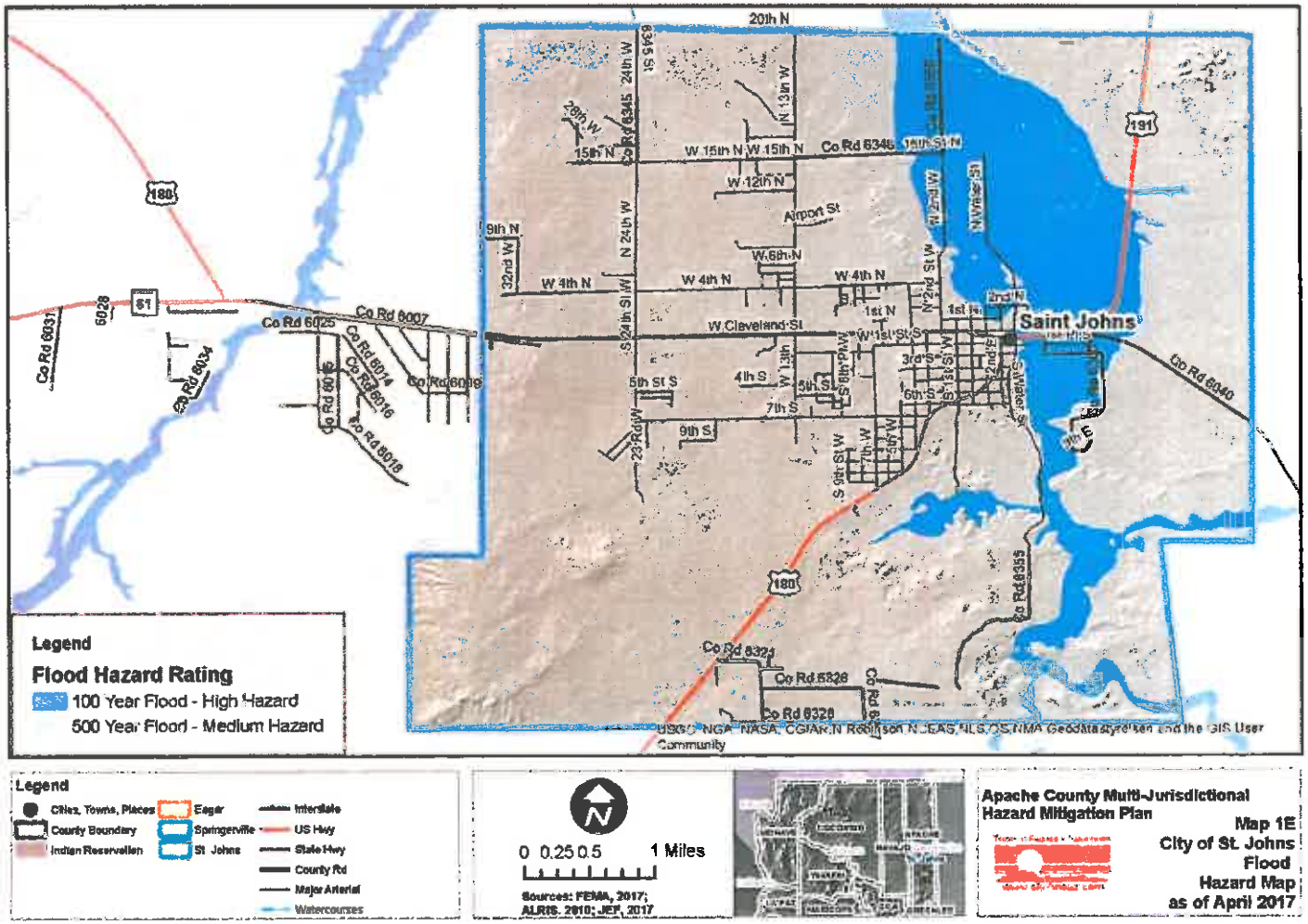
Map 4-2: Flood Hazard Area B for Apache County



Map 4-3: Flood Hazard Area for Eagar



Map 4-4: Flood Hazard Area for Springerville



Map 4-5: Flood Hazard Area for St. Johns

4.3.2 Severe Wind

Description

The hazard of severe wind encompasses all climatic events that produce damaging winds. For Apache County, severe winds usually result from either extreme pressure gradients that usually occur in the spring and early summer months, or from thunderstorms. Thunderstorms can occur year-round and are usually associated with cold fronts in the winter, monsoon activity in the summer, and tropical storms in the late summer or early fall.

Three types of damaging wind related features typically accompany a thunderstorm; 1) downbursts, 2) straight line winds, and infrequently, 3) tornadoes.

Downbursts are columns of air moving rapidly downward through a thunderstorm. When the air reaches the ground, it spreads out in all directions, creating horizontal wind gusts of 80 mph or higher. Downburst winds have been measured as high as 140 mph. Some of the air curls back upward with the potential to generate a new thunderstorm cell. Downbursts are called macrobursts when the diameter is greater than 2.5 miles, and microbursts when the diameter is 2.5 miles or less. They can be either dry or wet downbursts, where the wet downburst contains precipitation that continues all the way down to the ground, while the precipitation in a dry downburst evaporates on the way to the ground, decreasing the air temperature and increasing the air speed. In a microburst the wind speeds are highest near the location where the downdraft reached the surface, and are reduced as they move outward due to the friction of objects at the surface. Typical damage from downbursts includes uprooted trees, downed power lines, mobile homes knocked off their foundations, block walls and fences blown down, and porches and awnings blown off homes.

Straight line winds are developed similar to downbursts, but are usually sustained for greater periods as a thunderstorm reaches the mature stage, traveling parallel to the ground surface at speeds of 75 mph or higher. These winds are frequently responsible for generating dust storms and sand storms, reducing visibility and creating hazardous driving conditions.

A tornado is a rapidly rotating funnel (or vortex) of air that extends toward the ground from a cumulonimbus cloud. Most funnel clouds do not touch the ground, but when the lower tip of the funnel cloud touches the earth; it becomes a tornado and can cause extensive damage. For Apache County, tornadoes are the least common severe wind to accompany a thunderstorm.

History

Strong winds are a way of life for most areas of the county and severe wind events occur on frequent basis, especially during the spring and early summer months. These events do not always have reported damages however. For example, a total of 182 severe wind events were noted in the NCDC database for period of April 1957 – December 2016 with a reported total of one fatality, 18 injuries (for 2 events), and approximately $102,000 in damages (for seven events). The following are some of the significant events that have occurred:

- May 8, 2015, a strong cold front moved across northern Arizona, with damaging winds reported in far eastern Arizona. Sustained winds of over 50 mph with gusts of 67 mph were recorded at the Window Rock ASOS. A tree branch fell on a vehicle causing approximately $2,000 in damages. (NCDC, 2017).
- July 2012, strong thunderstorm microburst winds blew building materials into a house in St. Johns. Possible micro burst winds lifted other building material (4x8 foot plywood) with the cinder blocks on top, lofting the cinder blocks into the house. One cinder block flew through a window and poked a hole in the sheet rock inside. Another cinder block fell onto the sheet

metal roof. In another area, three power lines blown down. A total of $4,000 in damages was reported. (NCDC, 2107).

- March 1999, very strong pre frontal southerly winds wreaked havoc across northern Arizona. Early in the event, 90 mph (78kt) winds were measured at the Meteor Crater. Other peak wind gusts included 93 mph (81kt) at the Winslow Airport, 104 mph (90kt) at the St. Johns Airport, and 60 mph (52kt) at the Petrified Forest. The long duration of very strong winds induced large areas of blowing dust across the east central sections of the state. Interstate 40 westbound between Winslow and Holbrook and eastbound from Flagstaff to Holbrook was closed for eleven hours due to the cleanup of several car accidents and blown over semi-trailers. During the height of the event, visibilities were down to zero on Interstate 40 in the vicinity of Winslow, with one traffic fatality occurring in a ten car pileup. A second fatality occurred 5 miles south of Snowflake when a passenger van was blown across the road and head-on into a semi. On Navajo route 15 (in Apache County) seventeen students were injured after their school bus went head-on into a semi. Winds estimated at 100 mph had reduced visibilities to zero in this accident. There were numerous reports of power lines down and damaged roofs in Winslow, Leupp, and Joseph City.

Probability and Magnitude

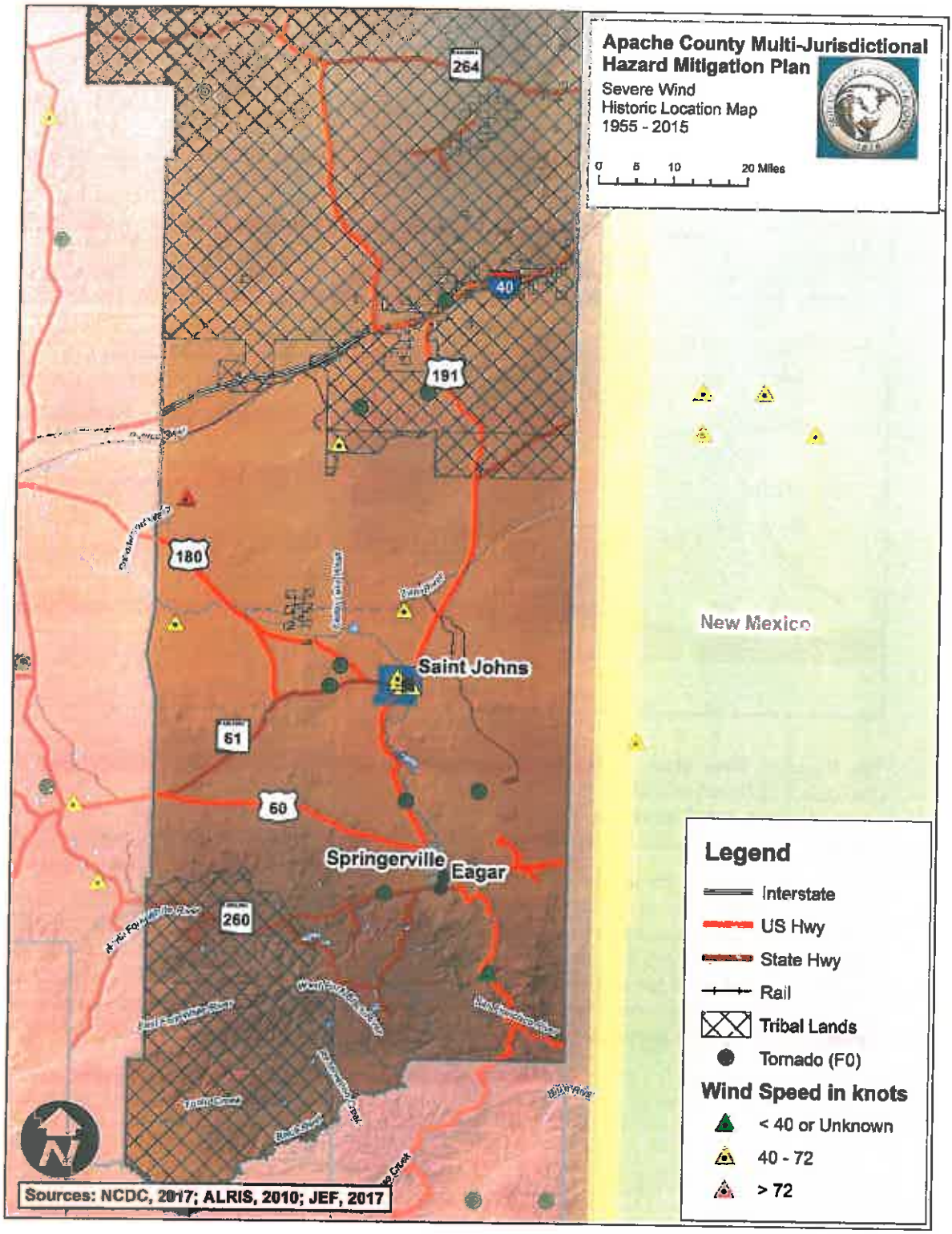
Most severe wind events are associated with thunderstorms as previously mentioned. The probability of a severe thunderstorm occurring with high velocity winds increases as the average duration and number of thunderstorm events increases. The average annual duration of thunderstorms in Apache County ranges from 60-90 minutes and is among the longest in the nation (DEMA, 2004). Despite the long duration time, the actual number of thunderstorms on average varies from 50-70 per year across the County.

Lightning strikes are another indicator of thunderstorm hazard. Strike densities across Apache County vary from 4-8 lightning strikes per square kilometer annually.

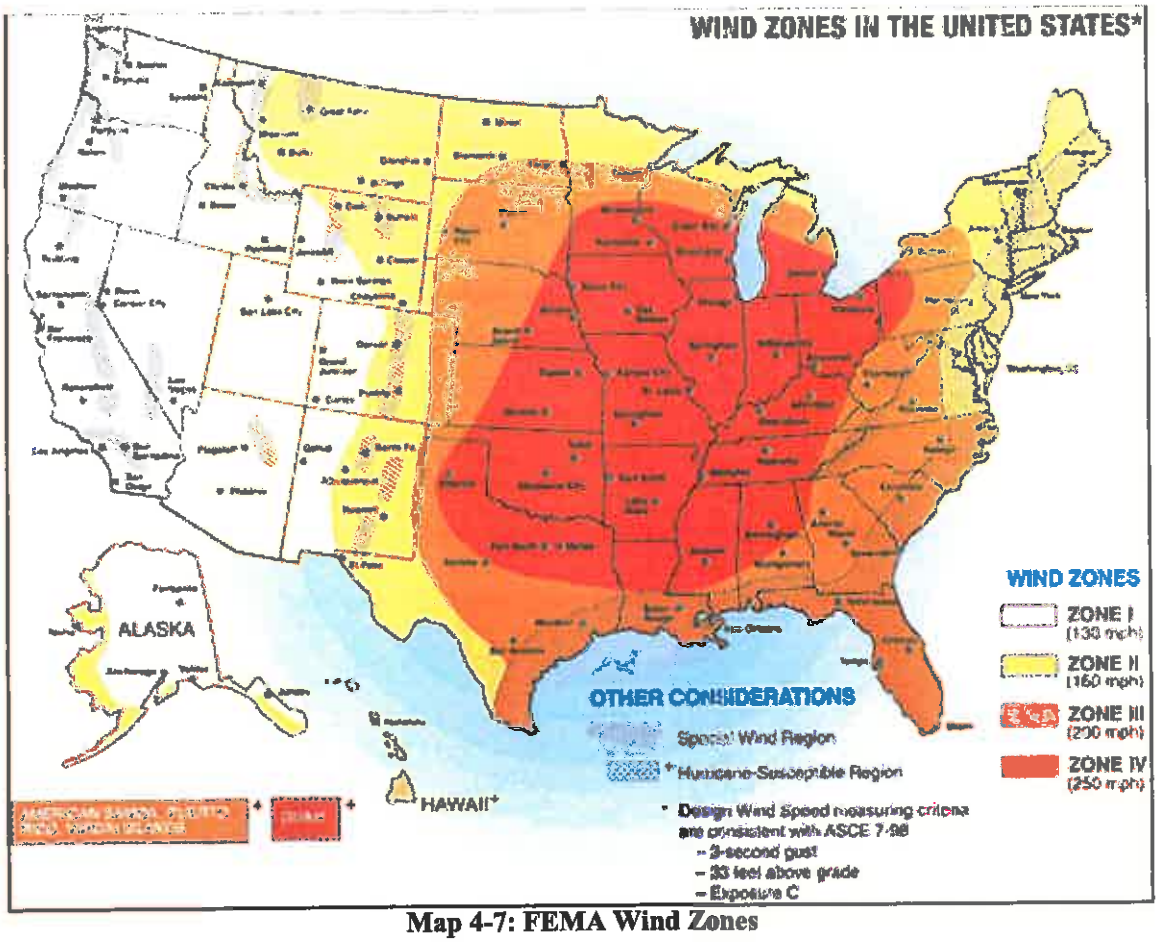
The NWS issues a severe thunderstorm watch when conditions are favorable for the development of severe thunderstorms. The local NWS office considers a thunderstorm severe if it produces hail at least 3/4-inch in diameter, wind of 58 mph (50kts) or higher, or tornadoes. When a watch is issued for a region, residents are encouraged to continue normal activities but should remain alert for signs of approaching storms, and continue to listen for weather forecasts and statements from the local NWS office. When a severe thunderstorm has been detected by weather radar or one has been reported by trained storm spotters, the local NWS office will issue a severe thunderstorm warning. A severe thunderstorm warning is an urgent message to the affected counties that a severe thunderstorm is imminent. The warning time provided by a severe thunderstorm watch may be on the order of hours, while a severe thunderstorm warning typically provides an hour or less warning time.

The American Society of Civil Engineers (ASCE) has identified a 3-second wind gust speed as the most accurate measure for identifying the potential for damage to structures, and is recommended as a design standard for wind loading. Most of Arizona and all of Apache County is designated with a design 3-second gust wind speed of 90 mph, indicating relatively low levels of risk from severe winds (ASCE, 1999).

Likewise, FEMA identifies most of the county to be in design wind speed Zone. In this zone, a design wind speed of 130 mph is recommended for the design and construction of community shelters.



Map 4-6: Historic Severe Wind Events



Map 4-7: FEMA Wind Zones

The Beaufort Wind Scale, shown below, provides a measure of wind magnitude versus expected damages. The Beaufort scale is useful because it specifically addresses wind effects over land, based on wind speed. Wind speeds in the Beaufort Number 10-11 range annually impact the County. On rare occasions, wind gusts in the county have and can at the Beaufort Number 12 category.

Based on the historic record, the probability of low-scale (F0 or F1) tornados occurring in Apache County is probable. Tornado damage severity is measured by the Fujita Tornado Scale. The Fujita Scale assigns a numerical value of 0 to 5 that is based on wind speeds, with the letter F preceding the number (e.g., F0, F1, and F2). Most tornadoes last less than 30 minutes, but some last for over an hour. The path of a tornado can range from a few hundred feet to many miles. The width of a tornado may range from tens of yards to more than a quarter of a mile. Most tornados impacting Apache County are likely to be in the lower ends of those ranges.

Table 4-14: Beaufort Wind Scale

Beaufort Number	Wind Speed mph	Description	Land Conditions
0	0	Calm	Calm. Smoke rises vertically.
1	1-3	Light air	Wind motion visible in smoke.
2	4-7	Light breeze	Wind felt on exposed skin. Leaves rustle.
3	8-12	Gentle breeze	Leaves and smaller twigs in constant motion.
4	13-18	Moderate breeze	Dust and loose paper rises. Small branches begin to move.
5	19-24	Fresh breeze	Smaller trees sway.
6	25-31	Strong breeze	Large branches in motion. Whistling heard in overhead wires. Umbrella use becomes difficult.
7	32-38	Near gale	Whole trees in motion. Effort needed to walk against the wind.
8	39-46	Gale	Twigs broken from trees. Cars veer on road.
9	47-54	Strong gale	Light structure damage.
10	55-63	Storm	Trees uprooted. Considerable structural damage.
11	64-73	Violent storm	Widespread structural damage.
12	73-95	Hurricane	Considerable and widespread damage to structures.

Source: New Mexico Natural Hazard Mitigation Plan

Table 4-15: Fujita Tornado Scale

Category	Wind Speed (mph)	Description of Damage
F0	40-72	Light damage. Some damage to chimneys; break branches off trees; push over shallow-rooted trees; damage to sign boards.
F1	73-112	Moderate damage. The lower limit is the beginning of hurricane speed. Roof surfaces peeled off; mobile homes pushed off foundations or overturned; moving autos pushed off roads.
F2	113-157	Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars pushed over; large trees snapped or uprooted; light-object missiles generated.
F3	158-206	Severe damage. Roofs and some walls torn off well constructed houses; trains overturned; most trees in forest uprooted; cars lifted off ground and thrown.
F4	207-260	Devastating damage. Well-constructed houses leveled; structures with weak foundations blown off some distance; cars thrown and large missiles generated.
F5	261-318	Incredible damage. Strong frame houses lifted off foundations and carried considerable distance to disintegrate; automobile-sized missiles fly through the air in excess of 100-yards; trees debarked.

Source: FEMA, 1997.

Climate Change Impacts

The NCA report (Garfin, et.al. 2014) is silent regarding the impact of climate change on severe wind events in the Southwest and no other sources were found that address a correlation of climate change to severe wind events in the Southwest region. Until such time as data or studies are available, no adjustments or extra consideration will be given to climate change impacts to severe wind events in the County.

Vulnerability

Table 4-16: CPRI Rating for Severe Wind

Jurisdiction	Probability	Magnitude/ Severity	Warning Time	Duration	CPRI Rating
Eagar	Highly Likely	Limited	6 - 12 hrs	< 1 week	3.15
Springerville	Highly Likely	Limited	6 - 12 hrs	< 1 week	3.15
St. Johns	Highly Likely	Limited	6 - 12 hrs	< 6 hours	2.95
Unincorporated Apache County	Highly Likely	Limited	6 - 12 hrs	< 1 week	3.15

Loss Estimations

The entire County is assumed to be equally exposed to the damage risks associated with severe winds. Typically, incidents are fairly localized and damages associated with individual events are relatively small due to the rural nature of the spread of the county population. Based on the historic record over the last five years, significant losses are infrequent or at least not reported. No attempt at estimating annual losses will be made with this Plan.

Development Trend Analysis

Over the last five years, Apache County and the incorporated jurisdictions have experienced near zero growth. Any future new development or substantial re-development of existing structures is subject to regulatory review procedures implemented by each jurisdiction.

Anticipated new development in the unincorporated areas of the County may include development of a helium production facility near the Navajo Generations Station rail crossing, continued infill into existing platted communities.

Sources

American Society of Civil Engineers, ASCE 7-98: Minimum Design Loads for Buildings & Other Structures.

AZ Division of Emergency Management, State of AZ Hazard Mitigation Plan, 2013.

FEMA, Multi-Hazard Identification & Risk Assessment – A Cornerstone of the National Mitigation Strategy.

FEMA, Understanding Your Risks; Identifying Hazards and Estimating Losses, Doc# 386-2.

New Mexico, 2010, New Mexico Natural Hazard Mitigation Plan.

US Dept of Commerce:
National Climatic Data Center, 2015: Storm Events Database, http://www.ncdc.noaa.gov/stormevents/
NOAA National Weather Service, Storm Prediction Center, SVRGIS database, http://www.spc.noaa.gov/gis/svrgis/
Storm Prediction Center, Fujita Scale: http://www.spc.noaa.gov/faq/tornado/ef-scale.html

5.3.3 Wildfire

Description

A wildfire is an uncontrolled fire spreading through wildland vegetative fuels and/or urban interface areas where fuels may include structures. They often begin unnoticed, spread quickly, and are usually signaled by dense smoke that may fill the area for miles around. Wildfires can be human-caused through acts such as arson or campfires, or can be caused by natural events such as lightning. If not promptly controlled, wildfires may grow into an emergency or disaster. Even small fires can threaten lives, resources, and destroy improved properties.

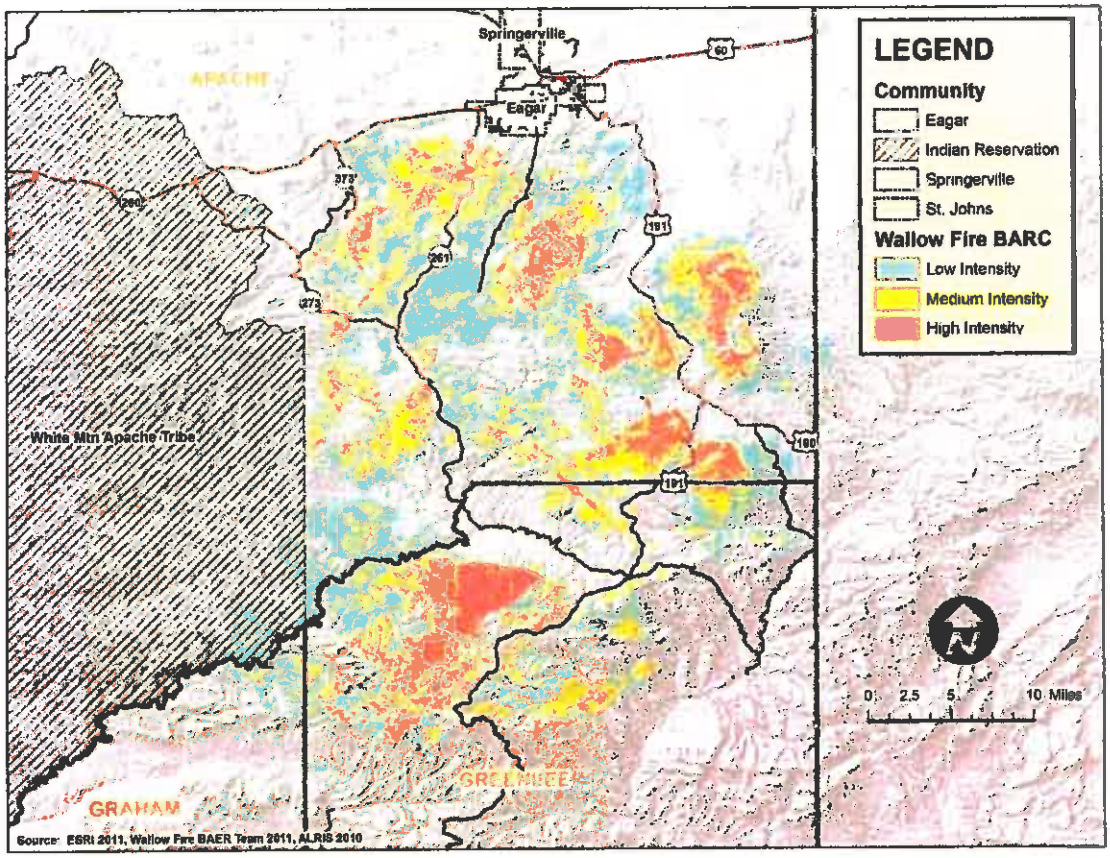
The indirect effects of wildfires can also be catastrophic. In addition to stripping the land of vegetation and destroying forest resources and personal property, large, intense fires can harm the soil, waterways and the land itself. Soil exposed to intense heat may temporarily lose its capability to absorb moisture and support life. Exposed soils in denuded watersheds erode quickly and are easily transported to rivers and streams thereby enhancing flood potential, harming aquatic life and degrading water quality. Lands stripped of vegetation are also subject to increased landslide hazards.

History

For the period of 1999 - 2008, data compiled by the AZ State Forestry Division[7] indicates that at least 28 wildfires greater than 100 acres in size have occurred in all of Apache Co. According to the National Wildfire Coordination Group (NWCG, 2017), there have been two large (greater than 5,000 acres) that have burned within Apache Co during the period of 2011 - 2016, as described below in chronological order:

- June 24, 2014, the human caused San Juan Fire was ignited on the Fort Apache Indian Reservation (White Mountain Apache Tribe), burning a total of approximately 7,004 acres, 20 miles west of Springerville and seven miles south of Vernon. Authorities closed the Apache-Sitgreaves National Forests south of Vernon and approximately 25 people from the Carlock Ranch, Red Cabin Ranch and Whiting homestead were evacuated as a precaution. The fire threatened 12 homes and 70 other buildings in a rural area between Vernon and McNary. In addition, 37 summer homes in the areas were evacuated as a precaution. The fire was declared controlled on July 8, 2014, with over $5.8 million in fire suppression costs expended (Evans, 2014; AZCentral.com, 2014).
- May 29, 2011, the human-caused Wallow Fire was ignited in an area west of Hannagan Meadow in the Apache National Forest. On June 8, 2011, the Governor declared an emergency as the 10-day-old fire continued to burn and spread out of control. When the fire grew to more than 200,000 acres, Eagar and Springerville were placed on pre-evacuation alert, and nearby Greer were evacuated. Shortly after that, the communities of Alpine and Nutrioso were evacuated as the fire moved easterly (Eastern AZ Courier, 2011). Finally, on July 8, the Wallow Fire was declared to be contained after burning a total of 538,049 acres (15,047 of which were located in New Mexico), becoming the largest fire in Arizona's history. Overall fire costs in terms of damages and firefighting efforts were estimated at over $109 million with 16 injuries reported as of July 21, 2011. A total of 32 residences, four commercial properties, 36 outbuildings, and one vehicle were destroyed. An additional five residences and one outbuilding were damaged. Many more millions of dollars are estimated to be spent on BAER Team recommended recovery and post fire flooding mitigation efforts. (InciWeb, 2011; AZ Family News, 2011).

[7] Data accessed in April 2017 via the following URL: https://www.arizonawildfirerisk.com/



Map 4-8: Wallow Fire Burn Area and Intensity

The Planning Team recognized that the disaster and historic hazard data collected and summarized in this Plan does not adequately reflect the true cost of a wildfire particularly, the cost of wildfire suppression efforts. For example, the San Juan Fire did not result in any structure or human losses, but was reported to cost over $5.8M to suppress. Furthermore, the County, State, Forest Service, and other agencies spend millions of dollars every year in wildfire mitigation in fuel treatment projects.

Probability and Magnitude

The probability and magnitude of wildfire incidents for Apache County are influenced by numerous factors including vegetation densities, previous burn history, hydrologic conditions, climatic conditions such as temperature, humidity, and wind, ignition source, topographic aspect and slope, and remoteness of area. Two sources were used to map the wildfire risk for Apache County. The primary dataset was recently developed as a part of the West Wide Wildfire Risk Assessment (WWWRA) (Sanborn Map Company, 2013) for the western U.S., and hosted by the Arizona State Forestry and Fire Management Department on its website. The second is the data developed for the Apache Communities' Wildfire Protection Plan (ACWPP) (LSD, 2005). The ACWPP is primarily used to verify the WWWRA coverage.

The wildfire hazard areas used in this update are derived from the Fire Threat Index (FTI) data distributed with the WWWRA. The FTI is a raster based depiction, compiled to a 30-meter resolution that reflects the likelihood of one acre burning with the fire location starting at the grid location. The calculation process integrates the probability of an acre igniting and the expected final fire size into a

single measure of wildland fire susceptibility. The assessed fire size is based on the rate of spread in four weather percentile categories.

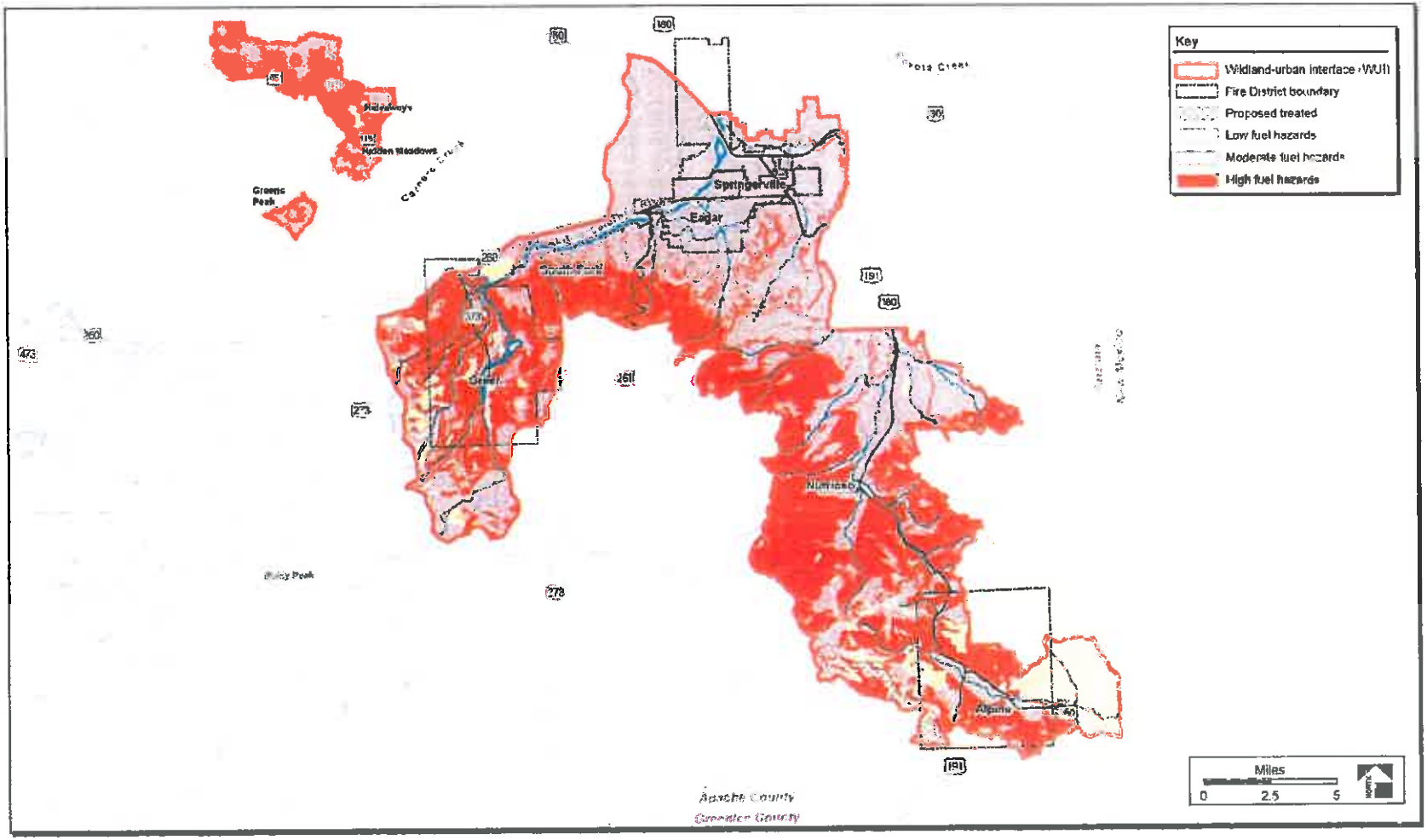
The inputs and intermediate data used in the wildfire model to produce the Wildfire Threat layer are:

- Probability of fire occurrence, derived from:
  - Historic fire locations and fire occurrence areas.
  - Weather influence zones derived from historic weather observations categorized into weather percentile categories
- Fire behavior (rate of spread) derived from:
  - Surface fuels
  - Canopy closure
  - Canopy characteristics
  - Topography
- Fire suppression effectiveness, derived from
- Historic fire sizes
- Historic protection organization

The FTI is calculated as number between 0 and 1. The WWWRA has ranked the FTI into nine divisions that describe the probability as ranging from Very, Very Low to Extreme. The results of the FTI data were plotted on work maps and reviewed by the planning team for relevance and applicability. The planning team used the ACWPP's comprehensive fuels hazard risk map compare back to the FTI data understanding that the ACWPP does not reflect the effects of the Wallow Fire, but did consider various wildfire risk elements such as vegetative fuels and densities, topographical slope and aspect, previous burn areas and ignition points, and prior treatment areas. In some cases, minor adjustments were necessary as the planning team felt that the FIT either under predicted or over predicted the hazard. Those adjustments were made during the vulnerability analysis and primarily focused on the unincorporated communities of Greer, Alpine and Nutrioso, and the areas within and surrounding the Towns of Eagar and Springerville. No other adjustments were made.

Climate Change Impacts

One of the "Key Messages" from the NCA report (Garfin, et.al. 2014) is the projection that wildfire risk and incidents within the Southwest region will likely increase due to climate change. Reduced precipitation, increased temperatures and longer, more severe periods of drought all factor into the assessment. In a paper produced by Northern Arizona University's Ecological Restoration Institute (Kent, 2015), the author noted that fire-climate relationships described for the recent past, may not hold true for future projections due to expected shifts in vegetation types fuel characteristics created by the influence of climate variations. Response to this amplification of current wildfire risk will likely include a greater need for vegetation management planning and greater enforcement of wildland urban interface best building practices. Incorporation of climate change impacts into the CWPP is also something the county and participating jurisdictions should consider.



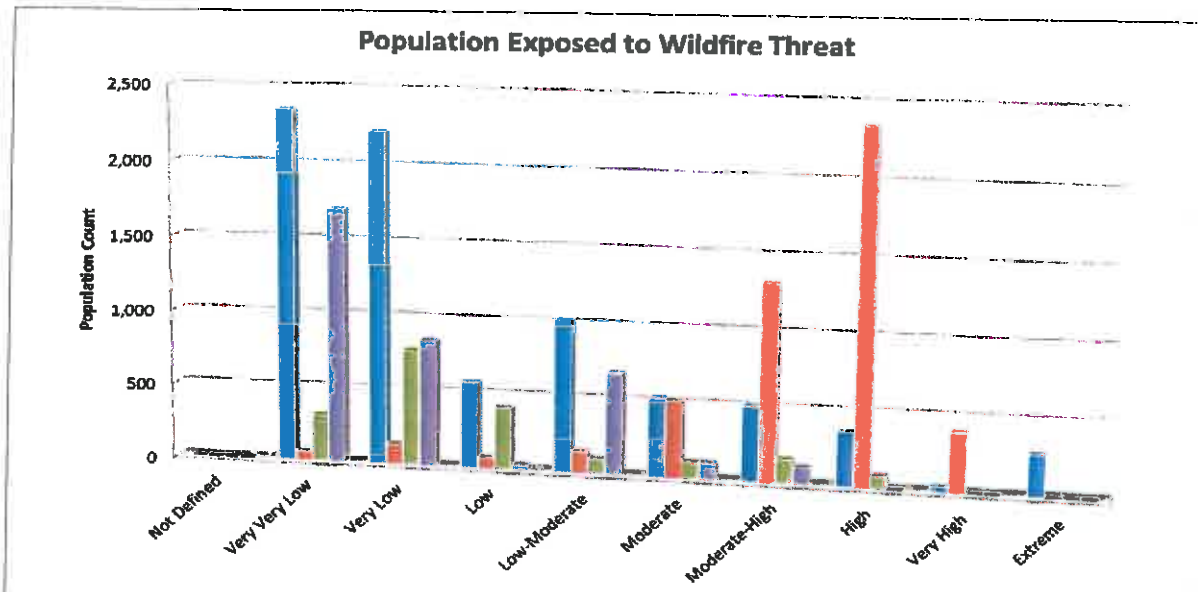
Source: Apache CWPP, 2004

Map 4-9: Apache County CWPP Fuel Hazards

Vulnerability

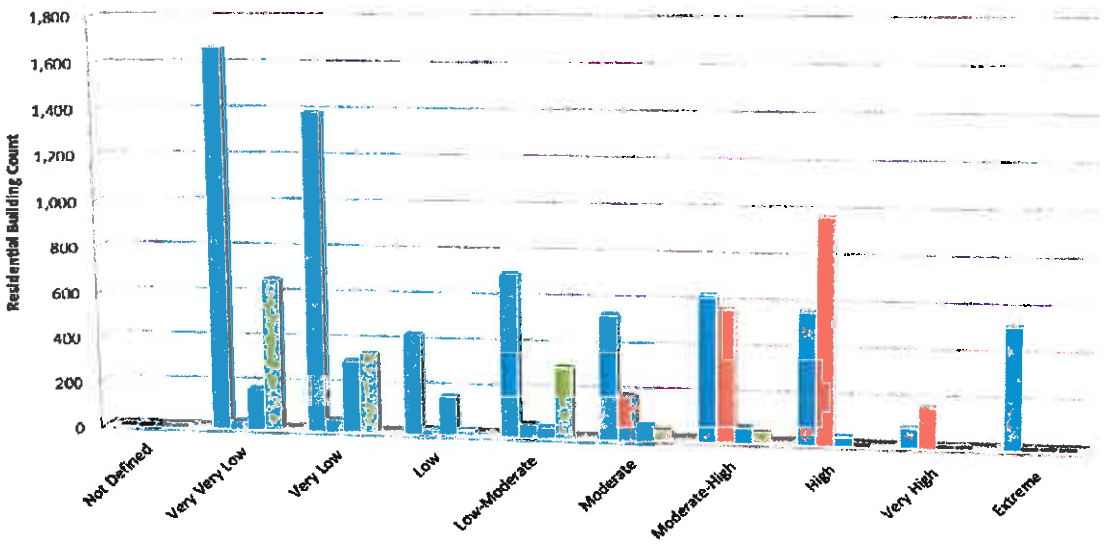
Table 4-17: CPRI Rating for Wildfire					
Jurisdiction	**Probability**	**Magnitude/ Severity**	**Warning Time**	**Duration**	**CPRI Rating**
Eagar	Likely	Limited	< 6 hours	< 1 week	2.85
Springerville	Likely	Limited	< 6 hours	< 1 week	2.85
St. Johns	Possibly	Limited	< 6 hours	< 6 hours	2.20
Unincorporated Apache Co	Likely	Limited	< 6 hours	< 1 week	2.85

Loss Estimations



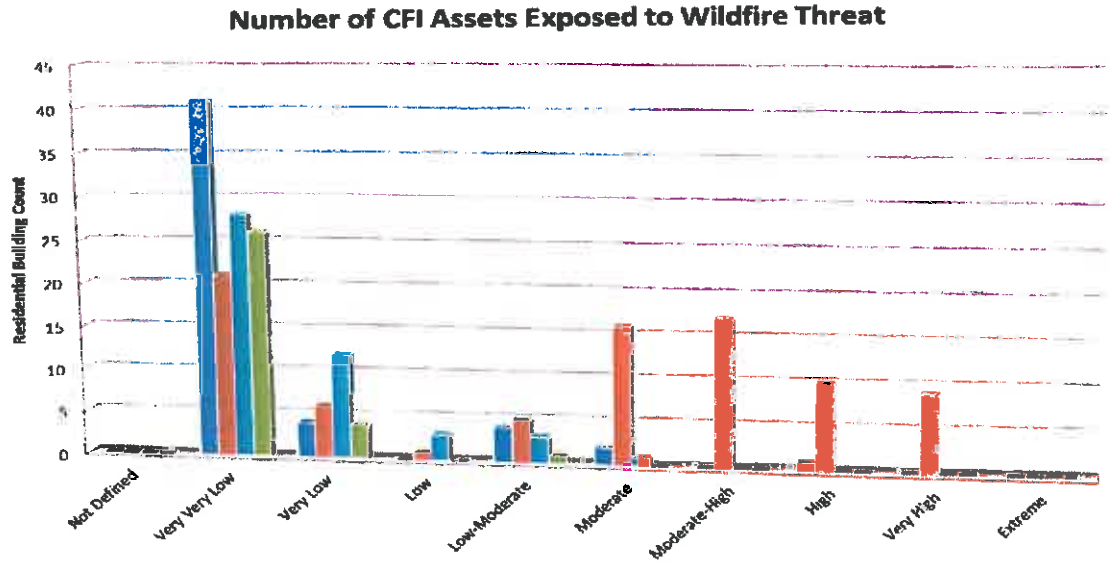
	Not Defined	Very Very Low	Very Low	Low	Low-Moderate	Moderate	Moderate-High	High	Very High	Extreme
Unincorporated Apache County	0	2,345	2,211	574	1,020	529	504	370	39	279
Town of Eagar	0	68	136	79	150	519	1,314	2,339	402	0
Town of Springerville	0	313	773	420	107	120	165	92	0	0
City of St. Johns	0	1,700	837	36	681	111	115	0	0	0

Figure 4-1: Population Estimated Exposure to Wildfire



	Not Defined	Very Very Low	Very Low	Low	Low Moderate	Moderate	Moderate High	High	Very High	Extreme
Unincorporated Apache County	0	1,665	1,390	435	711	541	633	570	84	525
Town of Eagar	0	33	51	22	56	189	576	975	176	0
Town of Springerville	0	177	310	167	44	64	65	39	0	0
City of St. Johns	0	664	348	21	305	46	49	0	0	0

Figure 4-2: Residential Building Estimated Exposure to Wildfire



	Not Defined	Very Very Low	Very Low	Low	Low-Moderate	Moderate	Moderate-High	High	Very High	Extreme
Unincorporated Apache County	0	41	4	0	4	2	0	1	0	0
Town of Eagar	0	21	6	1	5	16	17	10	9	0
Town of Springerville	0	28	12	3	3	1	0	0	0	0
City of St. Johns	0	26	4	0	1	0	0	0	0	0

Figure 4-3: Critical Facilities/Infrastructure Estimated Exposure to Wildfire

Wildfire risk associated with the High, Very High, and Extreme FTI hazards are primarily located within the Town of Eager and the Unincorporated Apache County communities of Greer, Alpine and Nutrioso. The wildfire risk for the City of St. Johns is relatively low and the Town of Springerville averages a moderate exposure.

The majority of cost associated with wildfires has historically been in the firefight costs, which can become substantial with large fires. For example, a Type 1 wildfire fighter crew costs about $1 million per day. Typically, deaths and injuries not related to firefighting activities are rare. However, it is feasible to assume that at least one death and/or injury may be plausible. There is also a very high probability of population displacement during a wildfire event, and especially in the urban wildland interface areas.

It is duly noted that the exposure numbers presented above represent a comprehensive evaluation of the County as a whole. It is unlikely that a wildfire would impact the entire county at the same time. Actual event based losses and exposure are likely to be only a fraction of those summarized above.

Development Trend Analysis

As previously discussed, Apache County and the incorporated jurisdictions have experienced near zero growth and any development over the past five-years. The development of new properties or substantial re-development of existing structures is now subject to regulatory review procedures implemented by each jurisdiction.

Anticipated new development in the unincorporated areas of the County may include development of a helium production facility near the Navajo Generations Station rail crossing, continued infill into existing platted communities.

By its very definition, the WUI represents the fringe of urban development as it intersects with the natural environment. As previously discussed, wildfire risks are significant for a sizeable portion of the County. Future development will only increase the WUI areas and expand the potential exposure of structures to wildfire. However the expected continued little growth over the next five years will result in only minor increases to the WUI. Any expansion of the WUI will require mitigation, with alternatives being addressed in the ACWPP through recommended guidelines for safe building and land-use practices in wildfire hazard areas.

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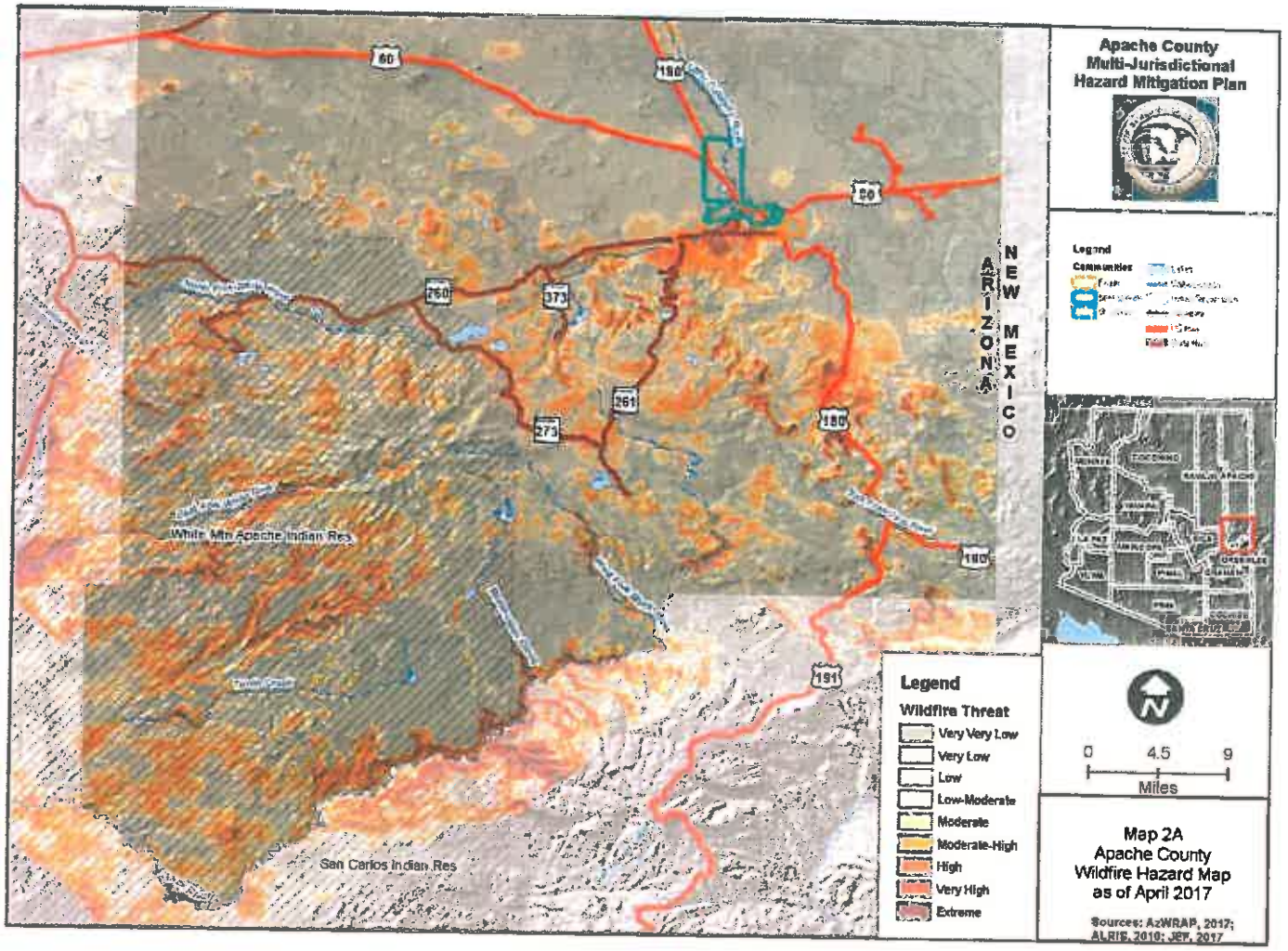
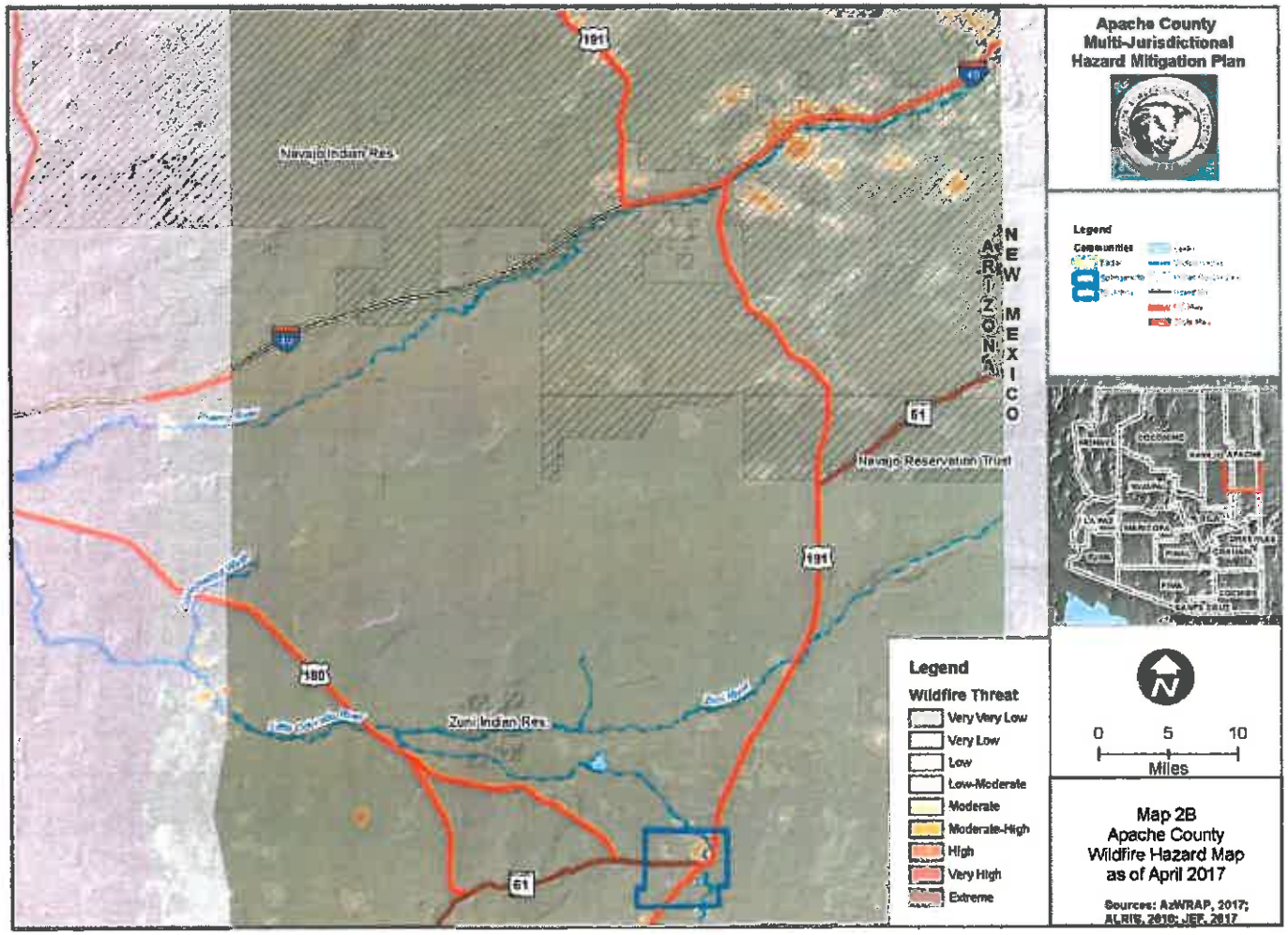
Profile Maps

County-Wide Wildfire Hazard Maps

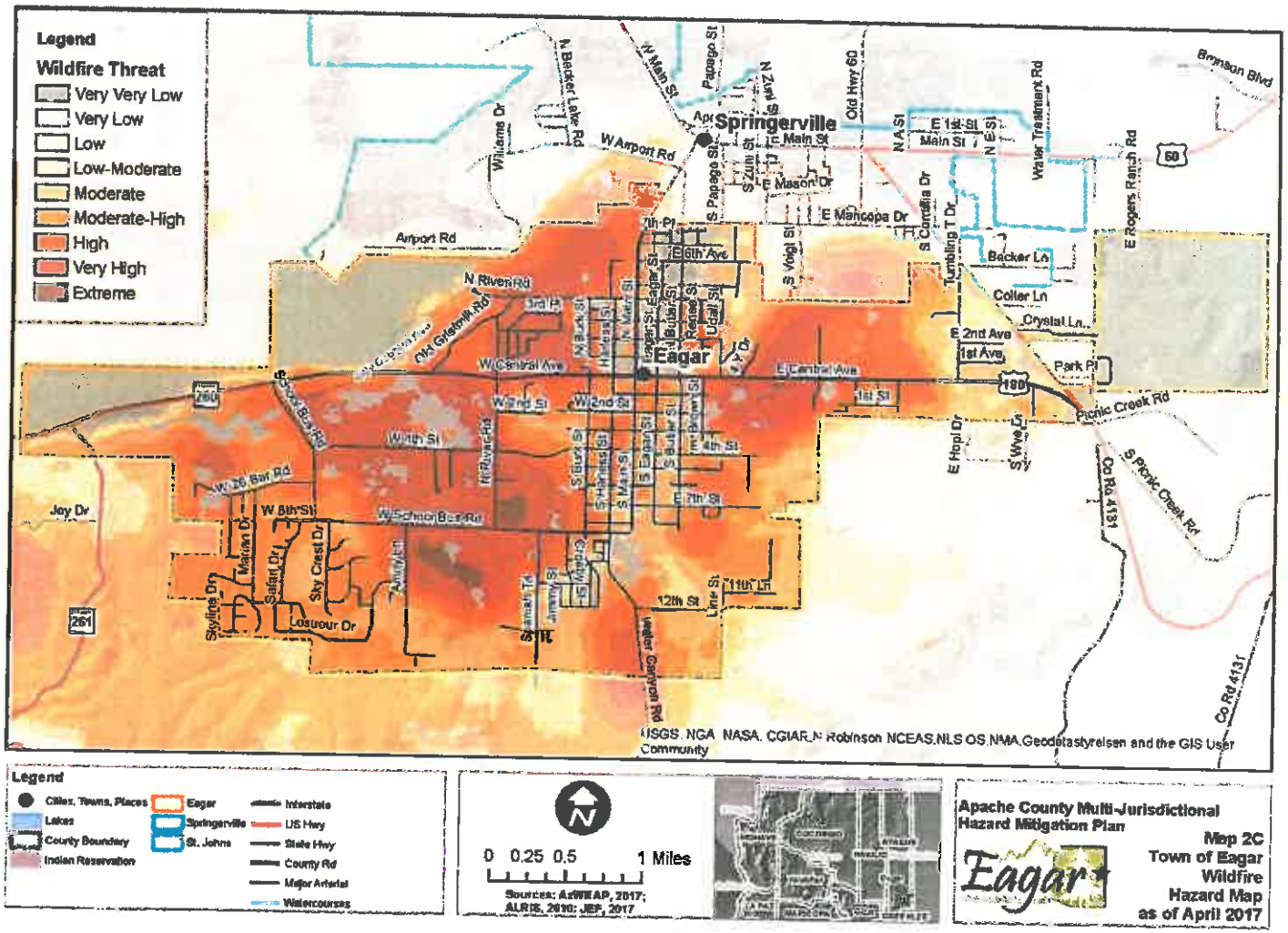
Eagar, Springerville, and St. Johns Wildfire Hazard Maps



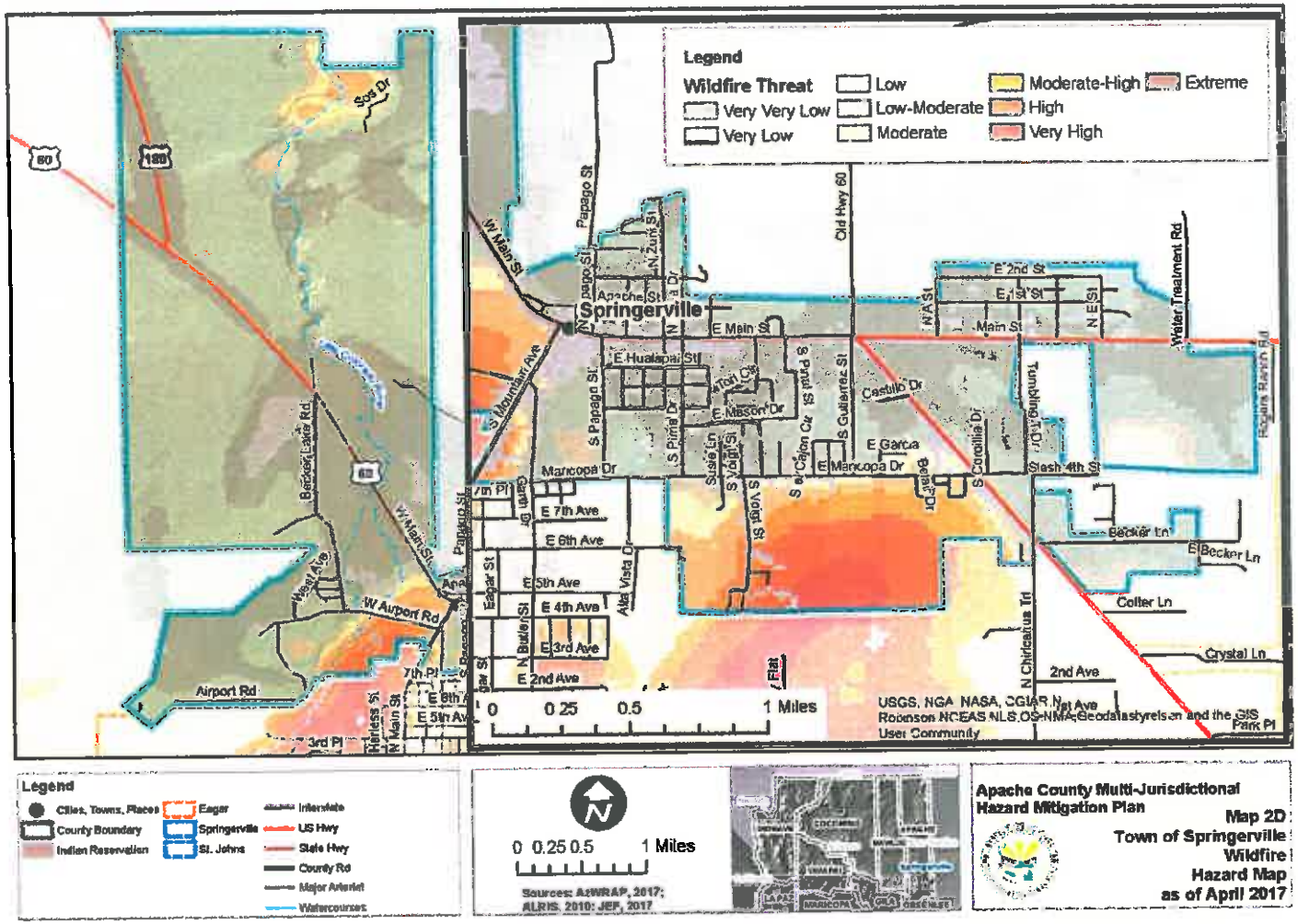
Map 4-10: Wildfire Hazard Area for Apache County



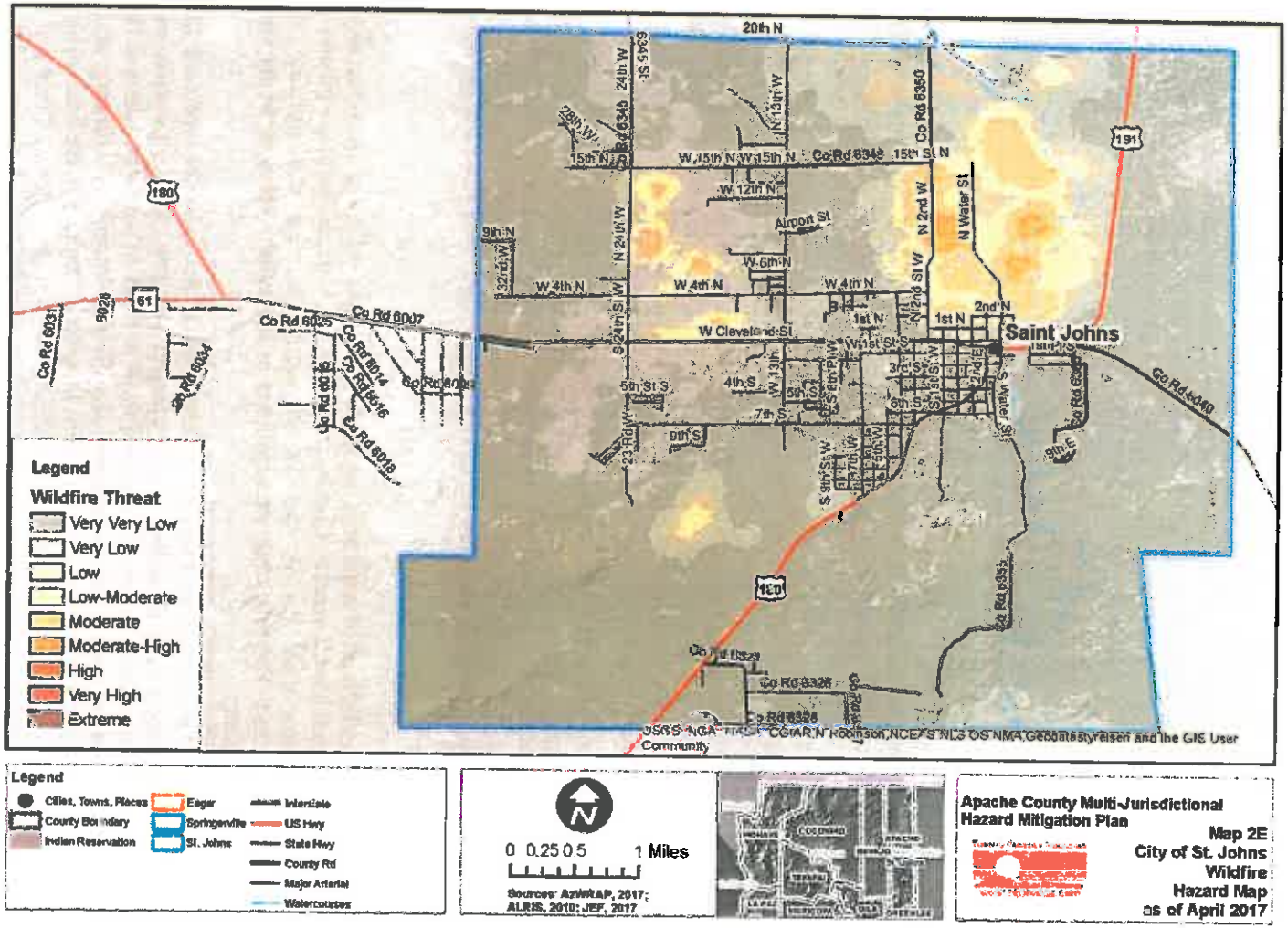
Map 4-11: Wildfire Hazard Area B for Apache County



Map 4-12: Wildfire Hazard Area for Eagar



Map 4-13: Wildfire Hazard Area for Springerville



Map 4-14: Wildfire Hazard Area for St. Johns

5.3.4 Winter Storm

Description

Severe winter storms affect many aspects of life in the County, including; transportation, emergency services, utilities, agriculture and the supply of basic subsistence to isolated communities. Interstate 40 and many of the local highways have produced numerous fatal multi-car accidents due to heavy winter snowfall and icy road conditions. Heavy snowfalls can also leave motorists stranded in their vehicles with potentially disastrous results like hypothermia and carbon-monoxide poisoning. Significant winter storms can also hinder both ground and air emergency services vehicles from responding to accidents or other emergencies. Remote areas and communities can be easily cut-off from basic resources such as food, water, electricity, and fuel for extended periods during a heavy storm. Extremely heavy snow storms can produce excessive snow loads that can cause structural damage to under-designed buildings. Agricultural livestock can also be vulnerable to exposure and starvation during heavy winter storms.

Freezing Rain is formed as snow falls through a warm zone in the atmosphere completely melting the snow. The melted snow then passes through another zone of cool air "super cooling" the rain below freezing temperature while still in a liquid state. The rain then instantly freezes when it comes in contact with the ground or other solid object. Because freezing rain hits the ground as a rain droplet, it conforms to the shape of the ground, making one thick layer of ice. Sleet is similar to hail in appearance but is formed through atmospheric conditions more like Freezing Rain. The difference is the snowflakes don't completely thaw through the warm zone and then freeze through the cool air zone closer to the ground. Sleet typically bounces as it hits a surface similar to hail. Sleet is also informally used to describe a mixture of rain and snow and is sometimes used to describe the icy coating on trees and power lines.

Sleet and freezing rain can cause slippery roadway surfaces and poor visibility leading to traffic accidents, and can leave motorists stranded in their vehicles with potentially disastrous results like hypothermia and carbon monoxide poisoning. Heavy sleet or freezing rain can produce excessive ice-loads on power lines, telecommunication lines and other communication towers, tree limbs, and buildings causing power outages, communication disruptions, and other structural damage to under-designed facilities.

History

Winter storms are the lifeblood of water supplies for most of Apache County. However, winter storms are also a deadly natural hazard. Apache County has endured at least six fatalities and nine injuries as a result of snow storms in the last 50 years. There have not been any extraordinary winter storm events in the recent past. The following are highlights of the more prominent winter storm events impacting Apache County:

- January 2010 Winter Storm Emergency, about 10 inches of snow occurred in Northern Greenlee County around Rose Peak and Hannagan Meadow. A strong Pacific winter storm produced moderate valley rain and mountain snow to much of southeast Arizona. Heavy snow combined with strong winds to produce significant blowing and drifting at the higher elevations. Heavy snow fell along the Eastern Mogollon Rim and White Mountains. Snowfall totals for this one storm include: Sunrise Mountain 70 inches, Eagar, Greer and Alpine 12 inches, Clints Well 16 inches, Heber 13 inches, Clay Springs 14 - 15 inches, and Forest Lakes 16 inches. The second in a series of strong Pacific storms moved across northern Arizona with widespread heavy precipitation. The snow level dropped down to between 5,000-5,500 feet elevation as the storm moved east. A Declaration of Emergency and released $200,000 to pay for emergency expenses from the weather events and a State of Emergency was declared for Apache, Coconino, Gila, Greenlee, La Paz, Maricopa, Mohave, Navajo, and Yavapai

Counties. The request for an Emergency Declaration was approved in support of life and property-saving operations on Hopi Tribe and Navajo Nation lands, and within Apache, Coconino and Navajo counties. Isolation of some communities and rough terrain, compounded with snow accumulations, complicated delivery of assistance like fuel, food and medical provisions. An additional $1 million was approved to cover state-share costs response efforts for the Hopi Tribe and Navajo Nation were named Operation Winter Storm and pooled the resources of federal, state and local agencies. Over nine days, 42,500 meals, 21,780 gallons of water, 279 cots, 5,475 blankets, and over 800 wood bundles were delivered by air and ground transport. (DEMA, 2010; FEMA, 2010)

- December 2007, seventeen inches of snow fell at the Flagstaff Airport. Twenty-six inches of snow fell near Blue Ridge. Over 200 traffic accidents and slide offs were reported by law enforcement departments. Nine of those involved minor injuries and there was one fatality. A strong area of low pressure from the Pacific Northwest brought heavy rain, very windy conditions, and high elevation snow on December 7th - December 8th. The next portion of the storm system began to move across the state on late Sunday December 9th and lasted through Tuesday December 11th. This brought heavy snow to many areas along and north of the Mogollon Rim and the White Mountains (NCDC, 2008).
- January 2006, a low pressure center moving into Arizona and a cold easterly flow into the into the Little Colorado River Valley, White Mountains, and Eastern Mogollon Rim caused widespread freezing drizzle and freezing rain. Law enforcement officers and the general public reported 47 wrecks and roll-overs between Winslow and the New Mexico State Line and south to Show Low. Five people died and many others were injured (NCDC, 2008).
- December 1967 - January of 1968, a winter storm paralyzed most of northern Arizona and brought snow to much of the state. The storm was actually two storms, with the second following closely on the heels of the first. During the nine day period, 86 inches of snow fell at Flagstaff. On December 14, a one-day state record of 32.5 inches at Sedona and 31.0 inches at the South Rim of the Grand Canyon. Heavy snows isolated Page and other Northern Arizona communities for approximately two weeks. People on the Navajo reservation were instructed to use ashes from their stoves to write distress signals in the snow that could be spotted from the air. Most roads were closed and emergency food had to be airlifted into the communities. The total disaster cost to the State was $2.2 million in 1997 dollars. Statewide, eight people died of exposure (DEMA, 2009).

Probability and Magnitude

In Arizona, there is a 5% annual chance that snow depths between zero and 25 centimeters will be exceeded, a snowfall probability that is among the lowest in the nation (DEMA, 2009). For Apache County and other higher altitude areas of the state, this statistic is misleading, as snowfall extremes can occur. Especially for those areas located at elevations above 6,000 feet.

Vulnerability

Table 4-18: CPRI Rating for Winter Storms

Jurisdiction	Probability	Magnitude/ Severity	Warning Time	Duration	CPRI Rating
Eagar	Likely	Limited	12 - 24 hours	< 1 week	2.55
Springerville	Likely	Limited	12 - 24 hours	< 1 week	2.55
St. Johns	Likely	Limited	6 - 12 hours	< 1 week	2.70
Unincorporated Apache Co	Likely	Limited	12 - 24 hours	< 1 week	2.55

Loss Estimations

There are no standardized methods for estimating losses associated with winter storm events and none are made for this Plan. From a historical perspective, both human and infrastructure losses could be expected with any major winter storm event, and especially regarding traffic accidents and human exposure.

Development Trend Analysis

Apache County and the incorporated jurisdictions have experienced near zero growth over the past five-years. Development of new properties or substantial re-development of existing structures is subject to regulatory review procedures implemented by each jurisdiction.

Anticipated new development in the unincorporated areas of the County may include development of a helium production facility near the Navajo Generations Station rail crossing, continued infill into existing platted communities.

Sources

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U.S. Dept of Commerce, National Climatic Data Center, 2010, Storm Events Database,
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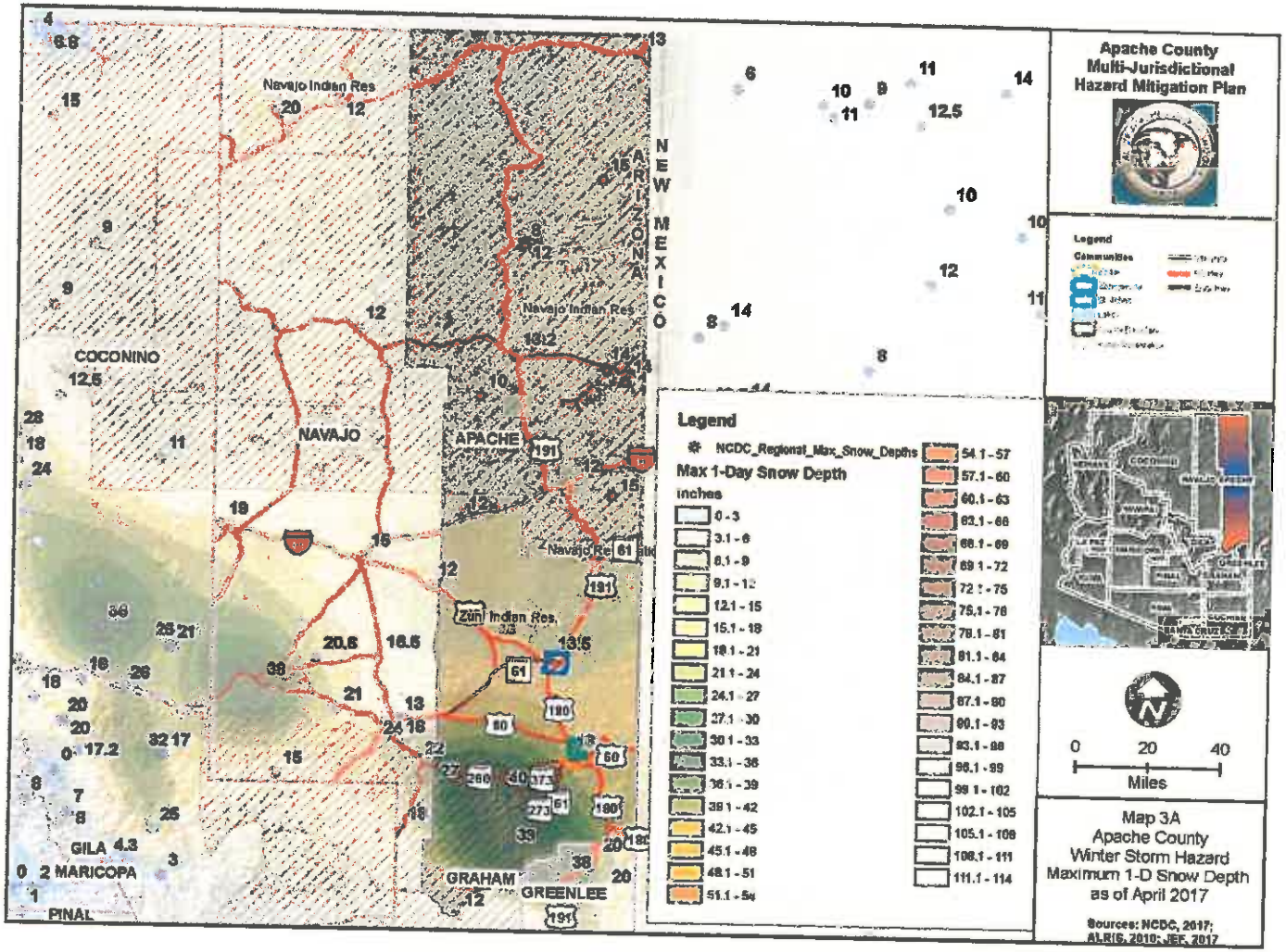
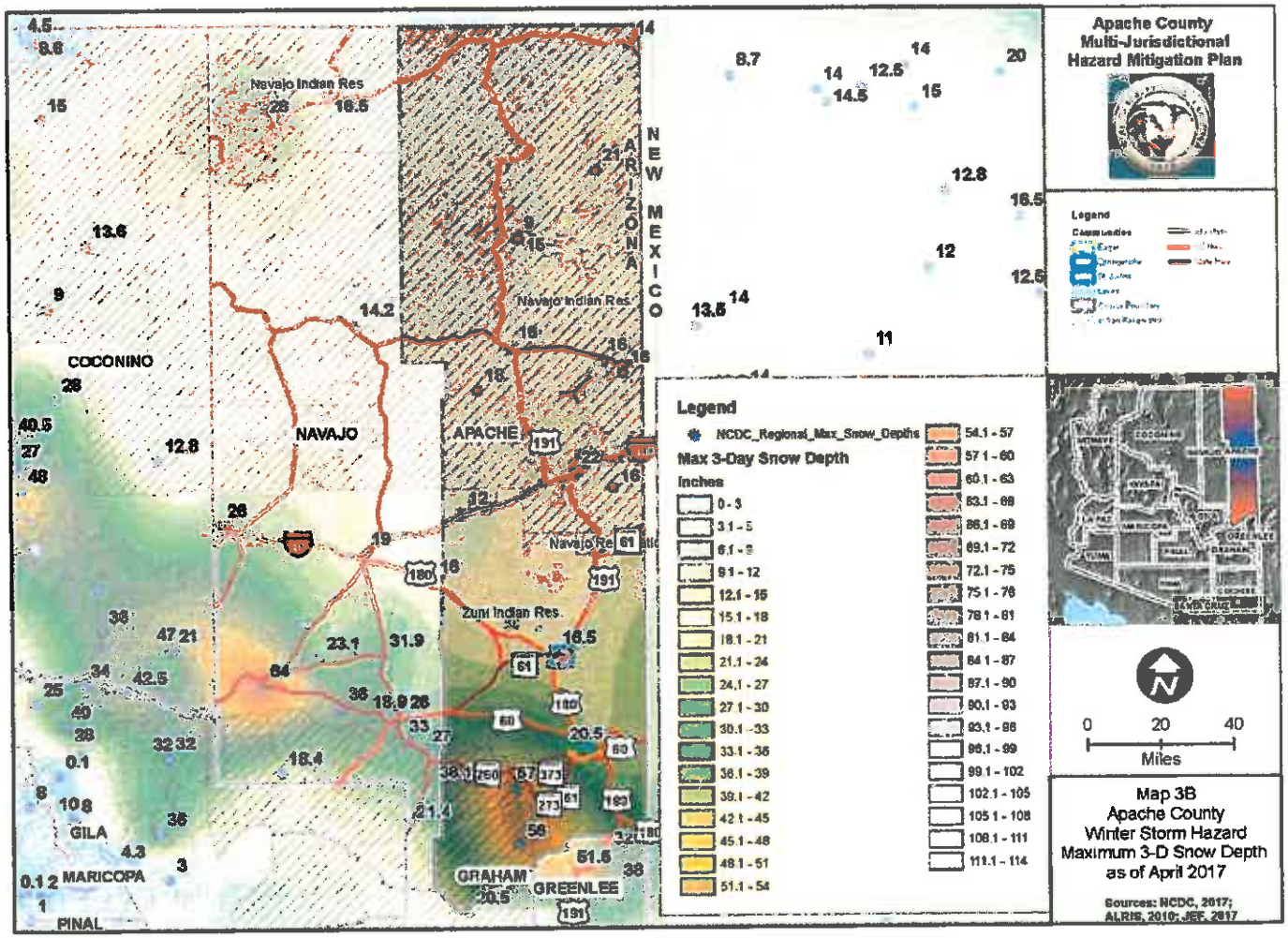
Profile Maps

County-wide Maximum 1-Day Snow Depths

County-wide Maximum 3-Day Snow Depths



Map 4-15: Winter Storm Max 1-D Snow Depth, Apache County



Map 4-16: Winter Storm Max 3-D Snow Depth, Apache County

5.4 Risk Assessment Summary

The jurisdictional variability of risk associated with the hazards assessed is demonstrated by the various CPRI and loss estimation results. Accordingly, each jurisdiction has varying levels of need regarding the hazards to be mitigated, and may not consider all of the hazards as posing a significant risk to their individual communities. The table below summarizes the hazards selected for mitigation by each jurisdiction and will be the basis for each jurisdictions mitigation strategy.

Table 4-19: Hazards to be Mitigated by Jurisdiction

Jurisdiction	Flooding	Severe Wind	Wildfire	Winter Storm
Eagar	x	x	x	x
Springerville	x	x	x	
St. Johns	x		x	
Unincorporated Apache County	x	x	x	x

SECTION 6: MITIGATION STRATEGY

The mitigation strategy provides the "what, when, and how" of measures that will reduce or possibly remove the community's exposure to hazard risks. The primary components of the mitigation strategy are categorized into the following:

Goals and Objectives

Capability Assessment

Mitigation Strategy

6.1 Goals and Objectives

The Planning Team reviewed the previous Plan's goal and objectives and determined they still adequately addressed the hazards and needs of the communities. Due in part to limited change or growth and development there were no changes in the priorities or visions of the communities.

- **GOAL:** Reduce or eliminate the risk to people and property from natural hazards.
  - **Objective 1:** Reduce or eliminate risks that threaten life and property in the communities.
  - **Objective 2:** Reduce risk to critical facilities and infrastructure from natural hazards.
  - **Objective 3:** Promote hazard mitigation throughout the communities.
  - **Objective 4:** Increase public awareness of hazards and risks that threaten the communities.

6.2 Capability Assessment

This section describes the jurisdictions' capacity to implement the mitigation measures proposed in this Plan. The jurisdictions have the power to adopt and implement regulations for land use, zoning, and historic preservation and to adopt standards of construction and modifications of land and structures. Since the 2011 Plan the jurisdictions have made progress in updating ordinances, plans and adopting more current building codes. Each of the jurisdictions within Apache County have a population less than 5,000 and relatively small in area. Over 60% of the County is comprised of Indian Reservation land. There is limited new development and growth in the area, therefore less regulatory restrictions than one might see in larger populated areas.

Here are some of the capabilities that may aid in the implementation of the mitigation strategy:

Table 6-1: Legal & Regulatory Capabilities for Uninc Apache County		
Regulatory Tools	**Description**	**Responsible Department/Agency**
Codes, Policies	• 2015 Int'l Building & International Residential Code • Roadway Show Removal and Cindering Policy • Land Use and Resource Policy	Community Development
Ordinances	• Floodplain Ordinance • Minor Land Split Ordinance • Subdivision Ordinance • Apache Co Zoning Ordinance (2012) • Outdoor Fire Ordinance (2014)	Community Development Engineering
Plans, Manuals, Guidelines	• Apache Co Comprehensive Plan (2015 update pending). Plan for conserving natural resources within the County. • Apache Co Hazard Mitigation Plan (2011)	Community Development
Studies	• Greer – Leslie Bond Study • ADWR Dam Break Study – River Reservoir, Greer	Engineering

Table 6-2: Technical Staff/Personnel for Uninc Apache County	
Resource	**Department/Agency**
Planner(s) or engineer(s) with knowledge of land development and land management practices	Community Development Director County Engineer
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	County Engineer District 3 Roads Manager
Planner(s) or engineer(s) with and understanding of natural and/or human-caused hazards	County Engineer District 3 Roads Manager
Floodplain Manager	County Engineer
Surveyors	Private Surveyor Private Surveyor
Staff with education or expertise to assess the community's vulnerability to hazards	ADEQ Liaison, TEP, SRP
Personnel skilled in GIS and/or HAZUS	Steve Rogers
Emergency Manager	Brannon Eagar
Grant writer(s)	Economic Development of Apache Co Grants Writer

Table 6-3: Fiscal Capabilities for Uninc Apache County		
Financial Resources	**Eligible to Use?**	**Comments**
Community Development Block Grants	Yes	Each community routinely applies for and is awarded these grants
Capital Improvements Project funding	Yes	CIP funding is used for both horizontal and vertical construction
Authority to levee taxes for specific purposes	Yes	Apache Co levies taxes for special districts including Library, Jail, Juvenile, flood control, and Health.
Fees for water, sewer, gas, or electric service	No	
Impact fees for homebuyers or new	No	

Table 6-3: Fiscal Capabilities for Uninc Apache County		
Financial Resources	**Eligible to Use?**	**Comments**
developments/homes		
Incur debt through general obligation bonds	Yes	
Incur debt through special tax bonds	Yes	
Fees for well, septic, and building permits	Yes	
Greater Arizona Develop Authority	Yes	

Table 6-4: Legal & Regulatory Capabilities for Eagar		
Regulatory Tools	**Description**	**Responsible Department/Agency**

Codes, Policies	• 2012 Int'l Building, Residential, Plumbing, Mechanical, Fire, Property Maintenance, and Council Electrical Code (Administrative Provisions)
	• 2011 National Electric Code
	• 1991 Town Code of Eagar with amendments
	• Snow Removal Policy
	• Code of Ordinances:
	  • Title 15 Buildings and Construction
	  • Title 16 Floodplain Damage Prevention
		Community Development (Building Safety, Planning and Code Enforcement)
		Fire

Ordinances	• 1984 Eagar Flood Damage Prevention Ordinance (Amended 2008) • 1998 Eagar Subdivision Regulations (Amended 2010)	Community Development (Planning, Floodplain Management)
Plans, Manuals, Guidelines	• General Plan (2014) - Comprehensive plan covering growth, land planning, economics and the overall development for Eagar. • Capital Improvement Plan (2017-2021) - Inventory and improvement plans for Eagar Infrastructure. (Five-Year Plan.) • Emergency Management Plan (2010) - Describes the mechanism whereby the town will conduct activities during an emergency event. • Water Master Plan (2001) - Study of the Town's water system capabilities & proposed improvements to the overall water system.	Eagar Community Development Director Town of Eagar – Water/ Waste Water Operator Eager Fire Chief Eager Public Works Eagar Police Chief
Studies	• FEMA DFIRM Maps (FEMA, Effective Sept 2007) • Current Soil Survey of Apache Co. (Central Part) • 1986 Floodplain Management Study for Eagar • 2009 Water Canyon LOMR Floodplain Delineation Study. (Effective March 2009) • 1991 & 2007 Flood Insurance Study for of Eagar	Community Development (Planning and Floodplain Management) Public Works Emergency Management FEMA NRCS NWS

Table 6-5: Technical Staff/Personnel for Eagar	
Resource	**Department/Agency**
Planner(s) or engineer(s) with knowledge of land development and land management practices	Eagar Community Development Director
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Eagar Community Development Director
Planner(s) or engineer(s) with and understanding of natural and/or human-caused hazards	Eagar Community Development Director, Fire Chief, Public Works Director
Floodplain Manager	Eagar Community Development Director
Surveyors	Contracted out to the private sector
Staff with education or expertise to assess the community's vulnerability to hazards	Eagar Community Development Director, Fire Chief, Police Chief, Public Works Director
Personnel skilled in GIS and/or HAZUS	Eagar Planning & Zoning Tech, Eagar Community Development Director
Emergency manager	Eagar Town Manager
Grant writer(s)	Community Development Director

Table 6-6: Fiscal Capabilities for Eagar		
Financial Resources	**Eligible to Use?**	**Comments**
Community Development Block Grants	Yes	
Capital Improvements Project funding	Yes	
Authority to levy taxes for specific purposes	Yes	Voter approval required
Fees for water, sewer, gas, or electric service	Yes	Water & sewer
Impact fees for homebuyers or new developments/homes	Yes	
Incur debt through general obligation bonds	Yes	
Incur debt through special tax bonds	Yes	Voter approval required

Table 6-7: Legal & Regulatory Capabilities for St. Johns		
Regulatory Tools	**Description**	**Responsible Department/Agency**
Codes	• 2015 International Building Code • St. Johns City Code (2014)	Planning/Zoning Administration IGA with Apache Co for inspections/review
Ordinances	• St. Johns Zoning Ordinance (2005) - Requirements for development, construction and relocation of commercial and residential structures and opportunities.	Planning & Zoning Administration
Plans, Manuals, Guidelines	• St. Johns General Plan (2003) - General planning document addressing past and future growth related goals and objectives to provide a foundation for long term growth and development in the City. • St. Johns Airpark Master Plan (2005) - Comprehensive plan for expansion of airpark facilities and land use.	City Manager / City Clerk Public Works

Table 6-8: Technical Staff/Personnel for St. Johns	
Resource	**Department/Agency**
Planner(s) or engineer(s) with knowledge of land development and land management practices	Zoning Administrator (Planning and Zoning Dept.) with assistance from Apache County
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	(IGA w/Apache County)
Planner(s) or engineer(s) with an understanding of natural and/or human-caused hazards	(Referral to private contractors)
Floodplain Manager	(IGA w/Apache County)
Surveyors	(Referral to private contractors)
Staff familiar with the hazards of the community	Fire Chief Fire Dept.
Personnel skilled in GIS and/or HAZUS	Public Works – GIS Technician (Referral to Apache County)
Emergency manager	(Deferred to Apache County)

Table 6-9: Fiscal Capabilities for St. Johns		
Financial Resources	**Eligible to Use?**	**Comments**
Community Development Block Grants	Yes	Yes, but must apply for new grants
Capital Improvements Project funding	Yes	Yes, but must have Council approval
Authority to levy taxes for specific purposes	Yes	Yes, but must have voter approval
Fees for water, sewer, gas, or electric service	Yes	Yes, but must have Council approval for water and sewer. Propane and electric are private corporations.
Impact fees for homebuyers or new developments/homes	No	Subject to approval of Council.
Incur debt through general obligation bonds	Yes	Yes, but must have voter approval
Incur debt through special tax bonds	Yes	Yes, but must have voter approval

Table 6-10: Legal & Regulatory Capabilities for Springerville		
Regulatory Tools	**Description**	**Responsible Department/Agency**
Codes	• Upgraded to 2015 Int'l Building and related codes.	Community Development
Ordinances	• Zoning Ordinance updated Ord. 2007-004 (subsequent amendments). • Subdivision Ordinance updated Ord. 2006-009.	Community Development
Plans, Manuals, Guidelines	• Springerville Community General Plan (2015-2025) - General document, reviewing past and future use and development. • Community Wildfire Protection Plan (2004) - Comprehensive plan for at-risk communities of the Apache National Forest in Apache County. • Springerville Municipal Airport Master Plan - Document, reviewing past and future use and development.	Community Development USDA Forest Service Town Council/Springerville Municipal Airport Advisory Committee
Studies	• US 60 Show Low to New Mexico Corridor Profile Study (1999) - Transportation study of existing and alternative route(s) • Round Valley Multimodal Transportation Study 2010-2012	ADOT

Table 6-11: Technical Staff/Personnel for Springerville	
Resource	**Department/Agency**
Planner(s) or engineer(s) with knowledge of land development and land management practices	Community Development Director
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Public Works Director, Building Inspector, Tetra Tech
Planner(s) or engineer(s) with an understanding of natural and/or human-caused hazards	Not on staff; but USFS and NRCS
Floodplain Manager	Community Development Director
Surveyors	Dan E. Muth, RLS, on call
Staff with education or expertise to assess the community's vulnerability to hazards	Public works, police and fire departments
Scientists familiar with the hazards of the community	Not on staff; but USFS, USGS, NRCS and others
Emergency Manager	Town Manager, Public Works Director, Fire & Police Dept
Grant writer(s)	Town Manager, Police Chief, Community Development Director, Community Services Director

Table 6-12: Fiscal Capabilities for Springerville		
Financial Resources	**Eligible to Use?**	**Comments**
Community Development Block Grants	Yes, must apply	
Capital Improvements Project funding	Yes, with voter approval & budget	
Authority to levee taxes for specific purposes	Yes, by council action or voter approval	
Fees for water, sewer, gas, or	Municipal water and sewer; other	Ongoing rate increases enacted in

Table 6-12: Fiscal Capabilities for Springerville		
Financial Resources	**Eligible to Use?**	**Comments**
electric service	utilities are cooperative of private. Established through planning document enterprise fund	2008 to fund maintenance/ improvements by population, growth & economy
Impact fees for homebuyers or new developments/homes	Yes	Enacted in 2007 for water and sewer
Incur debt through general obligation bonds	Yes, with voter approval	
Incur debt through special tax bonds	Yes, special districts	

6.3 Mitigation Measures

Mitigation measures when implemented may reduce the community's exposure and risk to the hazard(s) being mitigated. The process for defining the list of mitigation measures was accomplished by assessing the actions and projects in the previous Plan. A list of measures for this Plan was developed by combining the carry forward results from the assessment with new measures.

Previous Mitigation Measure Assessment

The Planning Team reviewed and assessed the measures in the previous Plan and evaluated and classified them accordingly. Measures that were to be kept were carried forward to become part of the current list for this Plan. Measures identified for deletion were removed and are not included in the current list. The results of the assessment are in this Plan's Appendix.

Mitigation Measures

The jurisdictions developed current mitigation strategies of new and existing mitigation measures using the goal and objectives, results of the vulnerability analysis and capability assessment, and the Planning Team's institutional knowledge of hazard mitigation needs in the community. Specific elements identified as a part of the Mitigation Strategy included:

- **Priority Ranking** – measures were assigned a priority ranking of high, medium, or low. The assignments were subjectively made using a simple process that assessed how measure satisfied the following considerations:
  - A favorable benefit versus cost evaluation, wherein the perceived direct and indirect benefits outweighed the project cost.
  - A direct beneficial impact on the ability to protect life and/or property from natural hazards.
  - A mitigation solution with a long-term effectiveness
- **Estimated Cost**
- **Anticipated Completion Date**
- **Lead Agency**
- **Potential Funding Source(s)**

The following tables summarize the current mitigation strategy for each jurisdiction.

Table 6-16: Mitigation Strategy for Apache County

Project Title Description	Hazard(s) Mitigated	Est. Cost & Completion	Project Lead	Potential Funding Source(s)	New or Existing	Description of work so far
MEDIUM PRIORITY						
Continue enforcement of County Flood Plain Ordinance, i.e. require flood hazard permits for construction in flood plain, require elevation certificates on construction in the flood plain etc.	Flood	$10,000 Continuous	County Engineer	Highway User Revenue Fund	E	The County floodplain ordinance was recently updated and approved by the Board of Supervisors. The changes were minor but brought the ordinance into alignment with state standards.
Wildfire Education/Awareness Program. Citizens will be informed about outdoor burn permits, red flag warnings, no burn days, and fire restrictions via PSAs and social media such as the County website, Facebook, Twitter, educational videos, the 311 info website, and a hotline. Citizens may also sign up for monthly email newsletters addressing preparedness, prevention, and mitigation information.	Wildfire	$75.00/yr for 311info website	Apache Co Emergency Management	Emergency Management Performance Grant	E	
Police County right-of-ways for beetle infested trees and dead trees needing removal. Coordinate the removal of those infested and dead trees.	Wildfire	Continuous	County Engineer	HURF	N	Direct Road Foremen to work with resource managers to remove hazard trees with in county Right of Ways
Winter Storm Education/Awareness Program. Citizens will be informed on preparedness topics such as ensuring heating systems are in good working order by having them checked by professionals and how to properly discard hot coals and ashes via PSAs and social media such as the County website, educational videos, 311 info website, Facebook, and Twitter. They will also receive tips for preparing their family, homes and cars for winter. Email newsletters will also address winter preparedness topics such as flu and hypothermia. Info on road closures and driving conditions will be available from ADOT, DPS and the Co Roads Dept.	Winter Storm	$75.00/yr for 311info website	Apache Co Emergency Management	The Emergency Management Performance Grant	E	
Cinder Stockpiling. Conduct strategic stockpiling of cinders for ease of access during storm events.	Winter Storm	$15,000	County Engineer	HURF	N	Strategic placement of cinder materials in high elevations for immediate access during storm events

Table 6-16: Mitigation Strategy for Apache County

Project Title Description	Hazard(s) Mitigated	Est. Cost & Completion	Project Lead	Potential Funding Source(s)	New or Existing	Description of work so far
Snow Preparation. Purchase additional snowplowing equipment for response to events.	Winter Storm	$25,000	County Engineer	HURF	N	Adding and replacing snow removal Equipment
Flood Education/Awareness Program. Citizens will be informed during spring and monsoon seasons about flood watches and warnings via PSAs. They will receive info on evacuation, sheltering in place, go-kits and 72-hr preparedness. Other info may address flood insurance, emergency plans and homeowner mitigation ideas. PSAs will be used to educate the public on community mitigation projects. This info will be dispensed through social media such as radio, the County website, educational videos, 311 info website, Facebook and Twitter.	Flood	$75.00/yr for 311info website	Apache County Emergency Management	The Emergency Management Performance Grant	E	
Little Colorado River Detailed Floodplain Analysis, Post Wallow Fire A detailed engineering analysis, performed by the Corps of Engineers with a partnership between USGS, FEMA NFIP, and Co Flood Control to study the Wallow post-fire changes to the watershed is being completed. The study will include detailed base flood elevations reflecting the change in runoff, to be used in conjunction with existing FIRM, to: a) assist in detailed planning and development along the LCR in the Greer area; b) provide data to understand the fire's effect on similar watersheds in Apache Co.	Flood	$166,000 2018	Apache County Engineer	USACE, County Flood Control, USGS	N	Development of partnership, proposal submitted by County, and awarded USACE grant of $115k for non-structural (study) work. USGS provided detailed survey work in conjunction with County Engineering staff. Study being completed by Los Angeles District office of the Corps.
Salado Flood Control Project. Flood mitigation/watershed restoration project to protect residences and vital infrastructure (US-191) from recurring flood hazard.	Flood	$406,626 / 2018	Apache County Engineer	FEMA PDM	N	Project selected by FEMA for further consideration in PDM program. Responses to FEMA RFI for addt'l technical data provided 3/17. Selected and awaiting EHP compliance. H&H & Pre-construction plans complete and awaiting grant award.

Table 6-16: Mitigation Strategy for Apache County

Project Title Description	Hazard(s) Mitigated	Est. Cost & Completion	Project Lead	Potential Funding Source(s)	New or Existing	Description of work so far
Red Clay Wash Flood Control Project. Restoration of crossing over perennial stream, to provide 100-yr recurrence interval protection, and all weather-access for a County Road which provides vital access for school, work, and emergency access to residents of the region.	Flood	$166,981 / 2018	Apache County Engineer	County/Tribal	N	Hydraulics and Hydrology complete, with concept plans provided to community leaders for final selection of design options, and funding. Damage-Frequency Assessment has been performed to assist leaders in selection of options.
Woodsprings Wash Flood Control Project. Restoration of crossing over ephemeral stream, to provide 100-yr recurrence interval protection, and all weather-access for a County Road which provides vital access for school, work, and emergency access to residents of the region.	Flood	$156,475 / 2018	Apache County Engineer	County/Tribal	N	Hydraulics & Hydrology complete, with concept plans provided to community leaders for final selection of design options and funding. Damage-Frequency Assessment has been performed to assist in selection of options.
Severe Wind Education/Outreach Program. Information on weather and ways to mitigate the impacts from wind will be delivered to the public using social media such as PSAs, County website, educational videos, 311 info website, Facebook and Twitter. Messages will include tips on proper tree trimming and roof, ventilation duct, deck, wall, gable, door and window maintenance.	Severe Wind	$75.00/yr for 311info website	Apache County Emergency Management	Emergency Management Performance Grant	E	
LOW PRIORITY						
Evaluate, design and construct low water crossings for County Road 5270 to eliminate flooding hazard.	Flood	$25,000	County Engineer	Highway User Revenue Fund	E	We are looking to utilizing GRS-IBS type structures on this route. We will continue to analyze cost effective ways to fix the issue on this route.
Building Codes. Adopt, inspect, and enforce/promote building codes for new construction.	Severe Wind	N/A	Community Development Director	County General Fund	N	

Table 6-16: Mitigation Strategy for Apache County

Project Title Description	Hazard(s) Mitigated	Est. Cost & Completion	Project Lead	Potential Funding Source(s)	New or Existing	Description of work so far
Tree Maintenance. Maintain trees around electrical lines.	Severe Wind	N/A	Building and Maintenance	County General fund	N	

Table 6-17: Mitigation Strategy for Eagar

Project Title Description	Hazard(s) Mitigated	Est. Cost & Completion	Project Lead	Potential Funding Source(s)	Status	Description of work so far
HIGH PRIORITY						
Continue to enforce zoning and building codes through current site plan, subdivision, and building permit review processes to reduce the effects of drought, flood, severe wind, and other hazards on new and/or remodeled buildings and infrastructure. Enforcement is accomplished through and by the Chief Building Official and Code Enforcement Officer reviewing all plans for new construction and complaints generated by citizens.	All	$1,500	Community Development	General Fund	In progress	Adopted 2012 building codes. Continued reviews of incoming building permits for conformance to local state and federal requirements.
Construct flood control infrastructure to control flooding on South School Bus Rd.	Flood	$1,042,179	Public Works	Grant	In progress	Site visits with the consultant & FEMA/ DEMA. Emergency jersey barriers were installed in 2011 to mitigate flooding of residential area after the Wallow fire as a temporary measure and will be replaced with permanent infrastructure as part of the project.
Continue to ensure that Town of Eagar residents are safe from flooding by meeting the NFIP requirements for development within a Special Flood Hazard Area through enforcement of the Floodplain Damage Prevention Ordinance. Also, mitigate existing local drainage and SFHA areas through continued partnerships with FEMA/DEMA & the Flood Control District. Review biannually the Floodplain Damage Prevention Ordinance.	Flood	Staff Time	Public Works	Grants	In progress	Waiting on Final approval from FEMA for Grant.
Construct flood control infrastructure to control flooding near Alta Vista Dr & protect critical infrastructure i.e. the dome, which is utilized for emergency evacuations & is located in a moderate 0.02% shaded X flood zone and has experienced extensive flooding from multiple microbursts in recent years.	Flood	$466,442	Community Development	General Fund	In progress	Acquired staff with CFM certification.
MEDIUM PRIORITY						

Table 6-17: Mitigation Strategy for Eagar

Project Title Description	Hazard(s) Mitigated	Est. Cost & Completion	Project Lead	Potential Funding Source(s)	Status	Description of work so far
Actively seek and acquire funding for the development of resource materials for public consumption. The materials shall describe potential hazards due to severe wind events and illustrate how to mitigate.	Severe Wind	$2,000	Community Development	General Fund	In progress	Live load forces due to wind are captured within the current adopted building code. These are enforced during the permitting stage for new construction of structures. Funding sources are being actively sought for the production of informational pamphlets.
Research and develop new wells and storage to more adequately supply the town in times of failure.	Drought, Severe Wind, Winter Storm	$1,700,000	Public Works	Combination of Grants and Loans	In progress	Acquired Golf Course Well 2016.
LOW PRIORITY						
Evaluate, design and construct low water crossings for County Road 5270 to eliminate flooding hazard.	Flood	$25,000	County Engineer	Highway User Revenue Fund	E	We are looking to utilizing GRS-IBS type structures on this route. We will continue to analyze cost effective ways to fix the issue on this route.
Snow Removal. Update County Snow Removal Policy.	Winter Storm	N/A	County Engineer	N/A	N	Analyze existing policy for potential improvements.
Building Codes. Adopt, inspect, and enforce/promote building codes for new construction.	Severe Wind	N/A	Community Development Director	County General Fund	N	
Tree Maintenance. Maintain trees around electrical lines.	Severe Wind	N/A	Building and Maintenance	County General fund	N	

Table 6-18: Mitigation Strategy for Springerville

Project Title Description	Hazard(s) Mitigated	Est. Cost & Completion	Project Lead	Potential Funding Source(s)	Status	Description of work so far
HIGH PRIORITY						
Increase Water Volume for Town. The Town is building up the town water infrastructure to mitigate the current drought seasons that currently exist. This program is for structure and resource fire protection. By obtaining loans and grants the town has completed cleaning of water infrastructure, including pipe lines and sewer lines. Cleaning of water storage tanks and the drilling and pumping of a new well.	Drought/ Wildfire	Staff Time, Ongoing, annual. $350,000 estimated per new well	Public Works Director, Fire Chief, Town Manager	General fund, Grants, Loans	In Progress	In 2016, the Town drilled a new well on the East Side. It is a major producing well. The Town also installed a Sensory Control and Data Acquisition System to turn on and off wells as needed, preventing any wasted water and resources.
Set Fire Restriction for Drought Periods. The council has given authority to the Fire Chief to set fire restrictions during low moisture times during the year. As we move into the hotter months the fire hazards are monitored by the county, and towns through agreement they all set the restriction at the same time.	Drought/ Wildfire/ Severe Wind	Staff Time Ongoing	Fire Chief/ Town Manager	General Fund	In Progress	Annual Fire Restrictions. Town Council pass a Resolution authorizing the Town Manager and Springerville Fire Chief to determine and declare that Red Flag conditions exist throughout the Town and ban all open burning and smoking within the town limits.
Provide up to date equipment for Emergency Responders.	All	$25,000 Annual	Fire Chief, Police Chief	General Fund	In Progress	USDA and $100 Club monies applied for. Looking for other monies.
Train firefighters on wildfires through the State Land Department firefighting contract.	Wildfire	$25,000	Fire Chief	Grant Funds	In Progress	Weekly meetings and trainings
Research and develop new wells to more adequately supply the town in times of failure.	Drought, Severe Wind, Winter Storm	$180,000	Public Works Director	General Fund, Loan	In Progress	New East side well developed in 2016. New wells still need to be developed.
Continue to develop resource materials and educate the public regarding evacuation procedures and individual responsibilities in the event of an emergency.	All	$30,000 2018	Chief of Police	General Fund	In Progress	Nothing has been done so far. A goal has been set by 2018.
MEDIUM PRIORITY						

Table 6-18: Mitigation Strategy for Springerville

Project Title Description	Hazard(s) Mitigated	Est. Cost & Completion	Project Lead	Potential Funding Source(s)	Status	Description of work so far
Community Trash Removal for Fire Protection. The Town has annual collection of trash and other debris to help in mitigating potential fire dangers as well as potential health issues. This occurs in May of each year. The Town acts in cooperation with Blue Hills environmental to allow free dumping of refrigerators, tires, and batteries at the land fill.	Wildfire/ Severe Wind	Staff Time, Ongoing , Annual	Public Works Director	General Fund	In Progress	Developed trash removal and free dump day at the transfer station. The town is part of an ADEQ program, VESP (AZ Voluntary Environmental Stewardship Program). Data is tracked and reported to ADEQ.
Community Branch Pickup for Fire Prevention. The Town does annual branch pickup to help mitigate potential fire hazards as well as giving a method for the customers to be able to prune tree and other vegetation from around there home. The town program allows residence to trim or remove trees, which are placed curbside for removal from town by the town. The program is advertised for best utilization.	Wildfire/ Severe Wind	Staff Time, Ongoing , Annual	Public Works Director	General Fund	In Progress	Developed a weekly branch removal and free dump day at the transfer station. The town is part of an ADEQ program, VESP (AZ Voluntary Environmental Stewardship Program). Data is tracked and reported to ADEQ.
Continue to enforce zoning and building codes through current site plan, subdivision, and building permit review processes to reduce the effects of drought, flood, severe wind, and other hazards on new and/or remodeled buildings and infrastructure.	All	Staff Time Ongoing	Planning and Zoning Dept Director	General Fund	In Progress	Up to date codes (IBC-UBC) are adopted into town code.
Promote adoption of Mutual Aid Agreements with all incorporated communities and adjoining counties for all hazards.	All	Staff Time Ongoing, annually	Town Manager	General Fund	In Progress	Will develop initial plan of action. IGA with neighboring communities and counties.
Purchase signage and barricade material for HAZMAT incidents.	HAZMAT	$25,000	Fire Chief Police Chief	Homeland Security Grant	No Progress	Find funding to do such a project. No funding to do such a project.
Establish six full time positions for fire crew to respond to local and rural fire incidents.	Wildfire	$240,000	Fire Chief	General Fund	No Progress	Find funding to do such a project. No funding to do such a project.
Develop resource materials describing potential hazards due to severe wind events and how to mitigate.	Severe Wind	$35,000 2018	Community Development Director	General Fund, Grants	No Progress	Will complete by 2018.
Develop a drainage master plan for the entire community.	Flood	$50,000	Planning and Zoning Director	General Fund	No Progress	Find funding to do such a project. No funding to do such a project.

Table 6-18: Mitigation Strategy for Springerville

Project Title Description	Hazard(s) Mitigated	Est. Cost & Completion	Project Lead	Potential Funding Source(s)	Status	Description of work so far
Perform basic remediation of existing drainage channels to reduce the effects of flooding.	Flood	$50,000	Planning and Zoning Director	General Fund	No Progress	Find funding to do such a project. Trying to work with Apache County to do an H&H Study.
Develop and adopt citywide water conservation standards, citing USGS precipitation records.	Drought	$20,000	Public Works Director	General Fund	Complete	Developed Drought Response Stages. USGS needs to be incorporated into it.
Work with Apache County to resolve ownership issues and improve erosion protection of abutments for Winema Bridge over the LCR.	Flood	$84,000	Public Works Director	Grant Funding	No Progress	No contact from Apache County Flood Control
Perform an audit of existing forms and procedures currently used by the Town to enforce the floodplain management ordinance, to ensure compliance with the NFIP requirements.	Flood	Staff Time 2018	Planning and Zoning Director	General Fund	No Progress	Will complete by 2018.
LOW PRIORITY						
Evaluate and install flood warning devices in strategic locations within the Town.	Flood	$45,000	Chief of Police	Grant Funding	No Progress	Find funding to do such a project. No funding to do such a project.

Table 6-19: Mitigation Strategy for St Johns

Project Title Description	Hazard(s) Mitigated	Est. Cost & Completion	Project Lead	Potential Funding Source(s)	Status	Description of work so far
HIGH PRIORITY						
Provide for the demolition or abatement of dangerous buildings that are in imminent danger of failure.	Building Collapse	$160,000	Community Development Director	General Fund	In progress	This will be a continual project we have abated several buildings so far.
Train firefighters on wildfires through the State Land Department firefighting contract.	Wildfire	$30,000	Fire Chief	Wildland Fund	In progress	Have trained several new firefighters, requires ongoing training.
Buy backup generators for all critical facilities to mitigate the effects of power outages associated with severe wind and winter storm events.	Severe Wind, Winter Storm	$350,000	Public Works Director	Rural Development Fund	In progress	Generator has been installed at Well #3.
Conduct roadside thinning and mowing along community roadways to reduce vulnerability to the effects of wildfire.	Wildfire	$100,000	Public Works Director, Fire Chief	HURF	In progress	Thinning, Mowing and prescribed burning of roadways to prevent fire. Approx 200 acres of roadway mowed, thinned, and burned.
MEDIUM PRIORITY						
Continue to enforce zoning and building codes through current site plan, subdivision, and building permit review processes to reduce the effects of drought, flood, severe wind, and other hazards on new and/or remodeled buildings and infrastructure.	All	Staff Time	Community Development / Director	General Fund	In progress	This will be continual. Apache County is contracted to the City to perform Permit & Plan Reviews, as well as Enforcement. The City now has a Compliance Officer for Code Enforcement.
Provide basic remediation of the existing LCR drainage channel between the Highway 180/191 bridge and 2nd West Crossing, to reduce the effects of flooding.	Flooding	$1,500,000	Public Works Director	Grant Funding	In progress	We have been working with the Zuni Tribe to find funding for this project. Seeking funding – no Physical effect.
Place mitigation brochures at City Hall as a hazard mitigation resource for citizens of St. Johns.	All	$300	City Manager	General Fund	No progress	Need to order brochures.
Continue to find and remediate non-reporting HAZMAT locations.	HAZMAT	$250,000	Public Works Director	Brownfield Grants	In progress	We have completed I Brownfield Project.
Develop IGA with Apache Flood Control District for establishing procedural guidelines for the implementation and enforcement of the NFIP floodplain management.	Flooding	$5,000	Public Works Director	General Fund	No progress	Need to sit down with AFCD and formulate plan.

SECTION 7: PLAN MAINTENANCE

This section defines the processes or mechanisms for maintaining the hazard mitigation plan. Elements of this section include:

Monitoring, Evaluating and Updating the Plan

Incorporation into Other Planning Mechanisms

Continued Public and Stakeholder Involvement

The jurisdictions in this Plan recognize that it is a "living" document requiring regular monitoring, evaluation, and updating.

There were no formal reviews or maintenance over the past five years. This is primarily due to some staff changes, a lack of effectively communicating the maintenance requirements to those with responsibility, and a general lack of awareness of the Plan's existence.

The Planning Team discussed ways to ensure the maintenance will occur in the future and the results of the discussions are outlined in the following sections.

7.1 Monitoring, Evaluating and Updating

The following procedures established have been established for Plan monitoring and evaluation:

- **Schedule** – The Plan will be evaluated at least annually or following a major emergency/disaster on or around the anniversary of the Plan approval date. County EM will initiate and coordinate the process.
- **Review Content** – The content and scope of the Plan evaluation will address the following areas:
  - **Hazard Identification:** Have the risks and hazards changed?
  - **Goals and objectives:** Do the goals and objectives still address current and expected conditions?
  - **Mitigation Projects and Actions:** What is the status of the mitigation measures?

The Plan will be reviewed and the findings and items for further discussion will be documented. Documentation of the annual evaluations may include memorandums generated by jurisdictions and notes on related discussions and conclusions.

To ensure the required Plan updates every five years occur, the following procedures will be adhered to:

- One year prior to the plan expiration date, the Planning Team will re-convene to review and assess the annual evaluation materials.
- The Planning Team will update and/or revise the appropriate or affected portions of the plan and produce a new Plan.
- The revised plan will be submitted to DEMA and FEMA for review, comment and approval.
- The Plan will be presented to the respective councils and boards for official adoption

7.3 Incorporation into Existing Planning Mechanisms

Incorporation of the Plan into other planning mechanisms, either by content or reference, enhances a community's ability to perform hazard mitigation by expanding the scope of the Plan's influence. Incorporation is not always possible due to the time periods represented by various community plans or the

lack of plans due to the smaller community size, as is the case in some parts of Apache County. However, awareness of other planning efforts and documents may help further incorporation or referencing when the opportunity does exist. Ways in which the previous Plan was incorporated or referenced are summarized below:

Table 7-1: Past Incorporation into Other Planning Mechanisms

Jurisdiction	Activities
Apache Co	• The mitigation Plan was reviewed and considered when adopting the building and international residential code, updating the zoning ordinance, and the outdoor fire ordinance. • The mitigation Plan was used to help facilitate the update of the County Comprehensive Plan.
Eagar	• The mitigation Plan was used to help facilitate the updates of the Town's General Plan and Capital Improvement Plan
St. Johns	• The mitigation Plan was reviewed during the update to the City Code. • The Plan was referenced in the application for a FEMA mitigation grant for School Bus Road.
Springerville	• The Plan was reviewed as part of the upgrade to the 2015 International Building code. • The Plan was used for incorporation and reference in the updated Springerville Community General Plan.

Some of the ways the jurisdictions intend to use this Plan for incorporation or reference in the future include:

- Use the risk assessment information as a resource to assist in future development of or updates to Emergency Operations Plans (EOPS) and Target Capability Assessments.
- Use the risk assessment information to keep Wildland Urban Interface plans current and updated.
- Continue to use the Plan to update community specific plans such as the General and Comprehensive plans.
- Include the risk assessment to guide the development/updating/adoption of building codes, planning and zoning codes and permitting, and other ordinances.
- Incorporating the mitigation Plan goals and objectives into basic community plans when appropriate.

7.4 Continued Public and Stakeholder Outreach/Involvement

The jurisdictions in this Plan are committed to keeping the public informed about the hazard mitigation planning efforts, measures and hazard related topics. These activities are quite robust as the communities are rural and close-knit. The table below summarizes activities for public involvement and dissemination of information that shall be pursued whenever possible and appropriate.

Table 7-2: Future Public and Stakeholder Outreach/Involvement

Jurisdiction	Activities
Apache Co	• Will continue to use all current social media sites to push information on emergency preparedness, along with information on what is occurring in the County that would pose a threat to the citizens such as road closures, accidents, winter storm warnings, wildland fire information, and public health information. • Add educational videos to EM website on fire safety, active shooter, earthquake, floods, and emergency preparedness tips. • Continue to conduct LEPC meetings 2-3 times a year • Maintain community involvement through meetings, booths at the local county fair and EM Preparedness Fairs providing brochures on emergency preparedness. • Continue to hold meetings involving local stakeholders, public health, first responders to discuss pending fire/winter storm seasons, their ongoing efforts for prevention and mitigation to the identified threats. • Continue to assist Navajo Nation with their outreach on educating the citizens on emergency preparedness, and the proper protocol for resource requests and proper documentation.
Eagar	• Will attend and be actively involved in LEPC meeting. • Maintain community involvement through information being provided at Eagar Daze, Round Valley Round Up and other Community celebrations and meetings • Community activities held during the local 4th of July celebration • Fire Prevention week held in October. • Building Safety Week held in May. • Continue to display the Fire Wise model and information at the Town Hall and Fire Department. • School Programs conducted by the police department when appropriate. • Make available information on a regular basis at Town Council, Planning/Zoning, other boards and committee meetings. • Add information to the Towns web site on a regular basis concerning emergency preparedness. • Advertise in the White Mountain Independent flood control related projects. • Continue to utilize social media outreach regarding hazard mitigation projects.
St. Johns	• St. Johns will continue to send out monthly newsletters to citizens who sign up for them, and copies are made available at the Town Hall. The newsletters provide information on activities that are occurring in the city, announcements advising of upcoming EM Preparedness Fairs, and information on Fire Restriction Stages.

Table 7-2: Future Public and Stakeholder Outreach/Involvement	
Jurisdiction	**Activities**
Springerville	• Springerville will continue to partner with the schools to teach Fire Prevention and Fire Wise during the month of October. • The Fire Chief will continue to inform the Town Council on a regular basis at Town Council and Planning and Zoning meetings about all identified threats; Winter Storms, Wildland Fire, Flooding, Severe Winds as each season for those threats approaches. • Springerville will use social media such as the Towns Website, and Facebook to educate the public on current threats in the community, and use the social media as an education tool on how they can help mitigate fire threats around their homes. We will use the local newspaper to publish Public Services Announcements regarding the same type of information.

APPENDIX A - PLAN TOOLS

Acronyms

ADWR .....Arizona Department of Water Resources

AGFD .....Arizona Game and Fish Department

ARS .....Arizona Revised Statutes

ASCE .....American Society of Civil Engineers

ASLD .....Arizona State Land Department

ASU .....Arizona State University

AZGS .....Arizona Geological Survey

BLM .....Bureau of Land Management

CAP .....Central Arizona Project

CAP .....Community Assistance Program

CFR .....Code of Federal Regulations

CRS .....Community Rating System

CWPP .....Community Wildfire Protection Plan

DEMA .....Arizona Department of Emergency and Military Affairs

DFIRM .....Digital Flood Insurance Rate

DMA 2000 .....Disaster Mitigation Act of 2000

DOT .....Department of Transportation

FEMA .....Federal Emergency Management Agency

FMA.....Flood Mitigation Assistance Grant Program

GIS .....Geographic Information System

HAZUS-MH ...Hazards United States Multi-Hazard

IFCI .....International Fire Code Institute

LEPC .....Local Emergency Planning Committee

MMI .....Modified Mercalli Intensity

NCDC .....National Climate Data Center

NDMC .....National Drought Mitigation Center

NESDIS .....National Environmental Satellite, Data and Information Service

NFIP .....National Flood Insurance Program

NFPA .....National Fire Protection Association

NHC .....National Hurricane Center

NIBS .....National Institute of Building Services

NID .....National Inventory of Dams

NIST .....National Institute of Standards and Technology

NSF .....National Science Foundation

NOAA .....National Oceanic and Atmospheric Administration

NRC .....National Response Center

NWCG .....National Wildfire Coordination Group

NWS .....National Weather Service

PSDI .....Palmer Drought Severity Index

SARA .....Superfund Amendments and Reauthorization Act

UBC .....Uniform Building Code

USACE .....United States Army Corps of Engineers

USDA .....United States Department of Agriculture

USFS .....United States Forest Service

USGS .....United States Geological Survey

VA.....Vulnerability Analysis

WUI .....Wildland Urban Interface

APPENDIX B – MEETING DOCUMENTATION

AGENDA

Apache County Hazard Mitigation Plan
Kickoff Meeting
February 1, 2017 – 1 PM-3 PM

1) Introduction	Beverly Parks, Apache County Susan Austin, AZDEMA
2) Apache County Hazard Mitigation Plan Team	Beverly Parks, Apache County
3) Scope and Objectives of Mitigation Plan	Jim DeAngelo, AECOM
4) Overview of the Hazard Mitigation Planning Process	Jim DeAngelo, AECOM
5) Timeline	All
6) Action Items	Jim DeAngelo, AECOM Beverly Parks, Apache County Susan Austin, AZDEMA
a) Data Collection b) Community Description c) Mitigation Measures d) Communication Methods e) Public Outreach	
7) Open Discussion	Jim DeAngelo, AECOM
8) Adjournment	Beverly Parks, Apache County

MEETING SIGN-IN

▶ Apache County Hazard Mitigation Plan, Kickoff

▶ TIME: Feb.1, 2017 @ 1:00PM MDT
PLACE: 309 S. Mountain Ave.,
Springerville, AZ 85938

Name	Title	Organization	Phone	Email
Beverly Parks	Apache Co. Emergency Manager	Apache Co.	9283377630	bparks@co.apache.az.us
Jim DeAngelo	AECOM Proj. Manager	AECOM	505.206.1750	Jim.deangelo@aecom.com
Jason Kiek	Asst Fire Chief	St Johns	928 245 0910	JSKIEK@FRONTIERNET.NET
MIKE NORMAN	ASSIST CHIEF	EAGAR	928-245-2584	mlnorman.fire@frontiernet.net
FRANK ADAMS	CHIEF	EAGAR	928-333-4363	f.adams@eagaraz.gov
Jennifer Loyd	Community Development	EAGAR	(928) 333-4128	j.loyd@eagaraz.gov
BRUCE RAY	INTERIM TOWN MANAGER	EAGAR	(928) 333-4128 x226	b.ray@eagaraz.gov
Mark Prein	Sr. Environmental Scientist	Salt River Project	928 337-5511	Mark.Prein@srpnet.com
Fern Crosby	Apache Co. Engineer A.C.		928 337 7528	fcrosby@co.apache.az.us
Robert Tom	Power Engr A/c, EAGAR		602-485-1862	ROBERT.TOM@COX.NET
Doyel Shanley	A.C.	AC	(928)	doyel.shanley@co.apache.az.us
Brannon Eagar	Apache Co EM Director	AC SO / E.M.	928 245-6294	beagar@co.apache.az.us

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MEETING SIGN-IN

▶ **Apache County Hazard Mitigation Plan, Kickoff**

▶ TIME: Feb.1, 2017 @ 1:00PM MDT
PLACE: 309 S. Mountain Ave.,
Springerville, AZ 85938

Name	Title	Organization	Phone	Email
Tammie Wilkins	HMEP Admin Coord.	ACPHSD	3336430	TJWilkins@co.Apache.AZ.us
Shane Bevington	Sergeant Emergency Coordinator	ACSO	(928) 245-0181	sbevington@co.apache.az.us
Kenny Pena	DHSEM Manager	ACPHSD	928 3336444	KPena@CO.Apache.AZ.US
MAX SADLER	Supervisor Chief	SFD	928 245-0149	MSadler@Springerville.AZ.Gov MNMSADLER@FrontierNet.Net

6501 Americas Parkway NE, Suite 900
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(505) 855-7500 / (505) 855-7555 fax

APACHE COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN – 2017 UPDATE

RISK ASSESSMENT WORKSHOP MEETING AGENDA

1. Asset Inventory Review/Update
2. Review hazard profile mapping and historic data for each hazard
3. Review Preliminary Vulnerability Assessment data
4. CPRI Analysis (worksheet)
5. Discuss and Profile Development Trends (worksheet)
    a. Past Plan Cycle
    b. Future Development
6. NFIP Statistics and Compliance (worksheet)

Risk Assessment Workshop
City of St. Johns

APACHE COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN - 2017 UPDATE
Sign-In Sheet

Meeting Date: April 24, 2017

Name	Organization	Title	Phone	Email
Paul Ramsey	City of St Johns	Public Works Dir/ Interim City Manager	928-245-1391	PRAMSEY@ SJAZ.US
Gary Liston	City of St Johns	Fire EMS Chief	928-245-6391	gliston @ sjaz.us
Scott Ogden	JE Fuller	Consultant	480 222 5717	scott@jefuller.com

Risk Assessment Workshop
Unincorporated Apache County

APACHE COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN - 2017 UPDATE
Sign-In Sheet

Meeting Date: April 24, 2017

Name	Organization	Title	Phone	Email
Beverly Parks	Apache EM	EM Specialist	928-337-7630	bparks@co.apache.az.us
Jason Kirk	SJ Fire	Asst Fire Chief	928 245 0910	jskirk@frontiernet.net
Ferrin Crosby	Apache Co. Engineering	County Engineer	928 245 0930	fcrosby@co.apache.az.us
Scott Ogden	JE Fuller	Consultant	480 222 5717	scott@jefuller.com

Risk Assessment Workshop
Town of Springerville

APACHE COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN - 2017 UPDATE
Sign-in Sheet

Meeting Date: April 25, 2017

Name	Organization	Title	Phone	Email
Tim Rasmussen	Town of Springerville	Public Works Director	928-333-5016	trasmussen@Springerville AZ.GOV
Steve West	Town of Springerville	Manager	928-333-2656	[illegible]@Springervilleaz.Gov
Mark Sadler	T of S	Fire Chief	928 245-0149	msadler@springervilleaz.Gov
Chris Cheser	TOS	Commodore/P/Z	928/333-2656	ccheser@springervilleaz.gov
Scott Ogden	JE Fuller	Consultant	480 222 5717	scott@jefuller.com

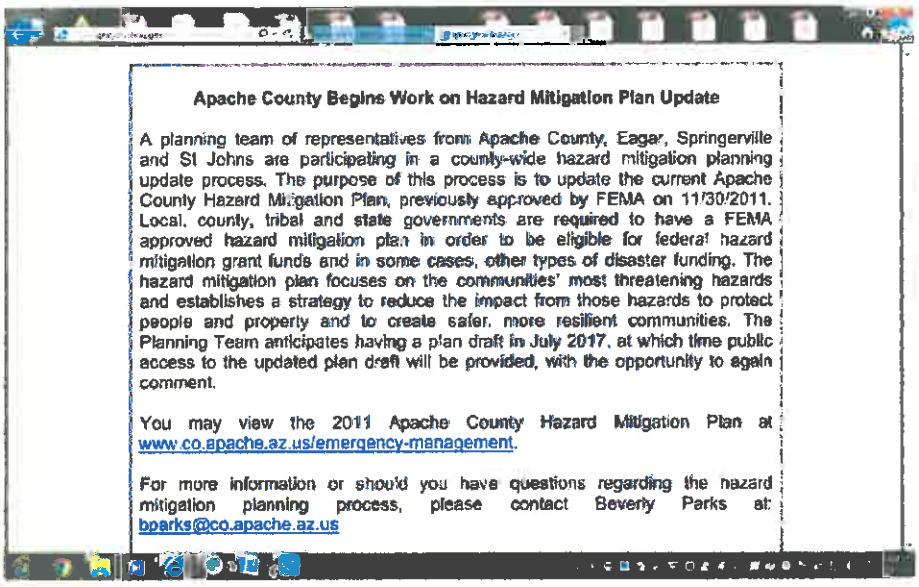
Risk Assessment Workshop
Town of Eagar

APACHE COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN - 2017 UPDATE
Sign-in Sheet

Meeting Date: April 25, 2017

Name	Organization	Title	Phone	Email
Erica Henderson	Town of Eagar	P&Z Clerk	928-333-4128	e.henderson@eagaraz.gov
Mike Sweetser	Town of Eagar	Chief of Police	928-333-4127	m.sweetser@eagaraz.gov
BRUCE RAY	TOWN OF EAGAR	INTERIM TOWN MANAGER	928-245-4737	b.ray@eagaraz.gov
KATIE BRADY	TOWN OF EAGAR	FINANCE MGR.	(928)333-4128	kbrady@eagaraz.gov
Frank Adams	EAGAR FIRE DEPT.	Fire	(928) 333-4363	f.adams@eagaraz.gov
Scott Ogden	JE Fuller	Consultant	480 222 5717	scott@jefuller.com

APPENDIX C- PUBLIC AND STAKEHOLDER OUTREACH/INVOLVEMENT

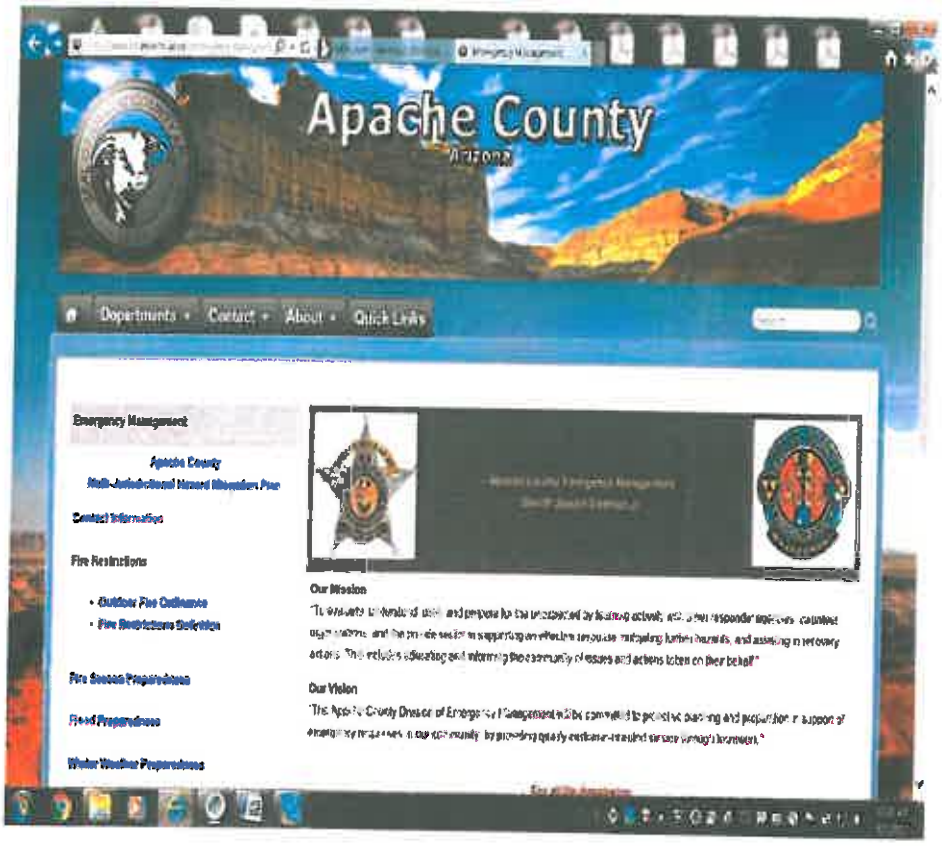


Apache County Begins Work on Hazard Mitigation Plan Update

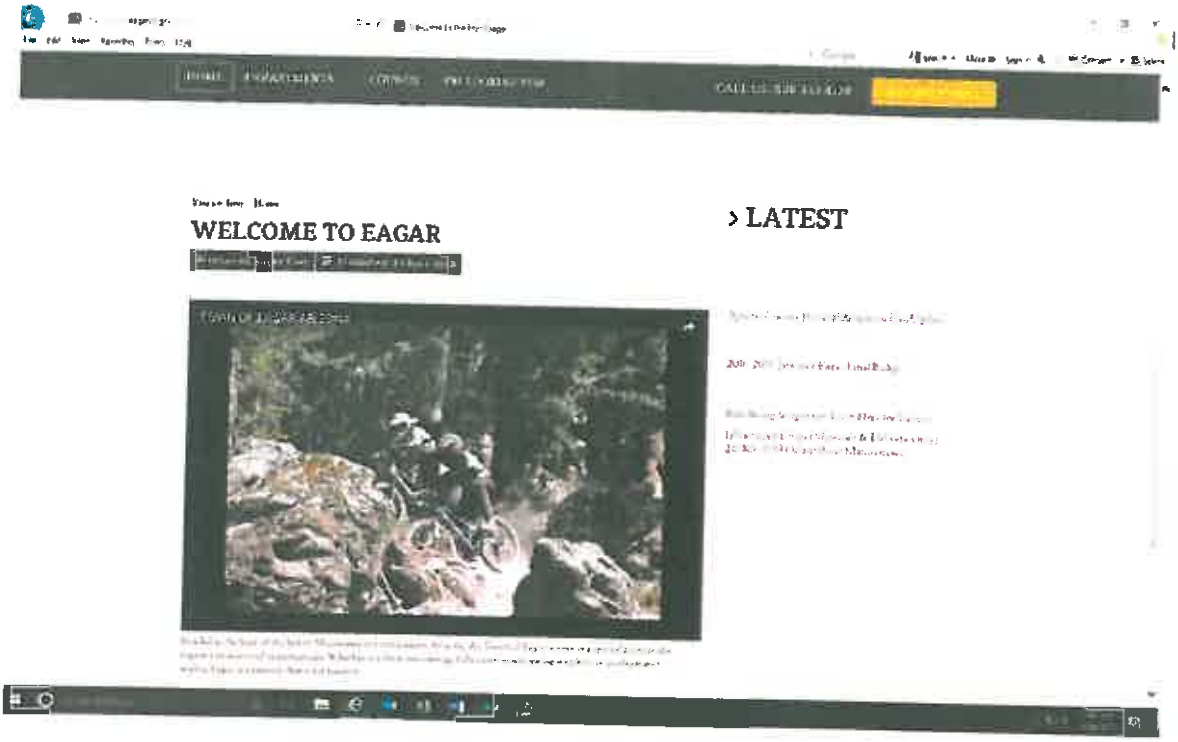
A planning team of representatives from Apache County, Eagar, Springerville and St Johns are participating in a county-wide hazard mitigation planning update process. The purpose of this process is to update the current Apache County Hazard Mitigation Plan, previously approved by FEMA on 11/30/2011. Local, county, tribal and state governments are required to have a FEMA approved hazard mitigation plan in order to be eligible for federal hazard mitigation grant funds and in some cases, other types of disaster funding. The hazard mitigation plan focuses on the communities' most threatening hazards and establishes a strategy to reduce the impact from those hazards to protect people and property and to create safer, more resilient communities. The Planning Team anticipates having a plan draft in July 2017, at which time public access to the updated plan draft will be provided, with the opportunity to again comment.

You may view the 2011 Apache County Hazard Mitigation Plan at www.co.apache.az.us/emergency-management.

For more information or should you have questions regarding the hazard mitigation planning process, please contact Beverly Parks at: bparks@co.apache.az.us


Apache County
Arizona
Departments
Contact
About
Quick Links
Emergency Management
Apache County
Contact Information
Fire Restrictions
Fire Season Preparedness
Flood Preparedness
Our Mission
Our Vision


Gateway to the
White Mountains
WELCOME TO SPRINGERVILLE


WELCOME TO EAGAR
› LATEST

APPENDIX D- PREVIOUS PLAN MITIGATION STRATEGY

Table 6-7-1: Apache Co Assessment of Previous Mitigation Strategy

Description	Hazard(s) Mitigated	Estimated Cost	Anticipated Completion Date	Primary / Lead Agency	Potential Funding Source(s)	Status	Disposition	Explanation for 'no progress' or description of work so far
Conduct public education activities that address all hazards using public service announcements, public access TV, and website technology. Elements to include mitigation, personal and family preparedness, and evacuation procedures	All	$10,000	Ongoing	Sheriff's Office/ Emergency Management	General Fund / EMPG grant	In progress	Keep	As each hazard season approaches, we will use various means to reach the public. Through 311info website, monthly newsletters, 311 hotline, PSA's to use a avenues to educate public on mitigation and preparedness they can do for themselves.
Evaluate, design and construct low water crossings for County Road 5270 to eliminate flooding hazard	Flood	$25,000	Ongoing	Engineering Department / County Engineer	Highway User Revenue Fund	In Progress	Keep, revise	We are looking to utilizing GRS-IBS type structures on this route. We will continue to analyze cost effective alternatives to fix the issue on this route
Conduct roadside thinning along county roadways and USDA easements to reduce vulnerability to the effects of wildfire	Wildfire	$10,000	Ongoing	Engineering Department / County Engineer	Highway User Revenue Fund	In Progress	Keep	County crews and contractors have cleared many hazard trees in the mountain communities. Crews continue to clear and thin problem areas in county right of ways.
Buy backup generators for all critical facilities in regards to power and emergency response facilities	Severe Wind, Winter Storm	$25,000	Dependent upon external funding	BOS/Emergency Management	Grant Funds	In Progress	Keep	Have obtained generators through outside source.
Expand criminal justice vertical and horizontal data integration and provide for data integrity throughout the County with capability to link with regions and state systems to enhance information sharing regarding foreign and domestic threats	Terrorism, Civil Disturbance	$25,000	Anticipate March 2012	Sheriff's Office/ Emergency Management	SHSGP/ Grant funding	In progress	Keep	Continue to work with TLO's in our county, & dispatch services in both Apache, Navajo county & with DPS.
Continue enforcement of Co Flood Plain Ordinance, i.e. require flood hazard permits for construction in flood plain, require elevation certificates on construction in the flood plain etc.	Flood	$10,000	Ongoing	Engineering Department / County Engineer	Highway User Revenue Fund	In progress	Keep	The county floodplain ordinance was recently updated and approved by the Board of Supervisors. The changes were minor but brought the ordinance into alignment with State

Table 6-7-1: Apache Co Assessment of Previous Mitigation Strategy

Description	Hazard(s) Mitigated	Estimated Cost	Anticipated Completion Date	Primary / Lead Agency	Potential Funding Source(s)	Status	Disposition	Explanation for 'no progress' or description of work so far
								Standards.
Evaluate, design and construct low water crossings or increased flow capacity for County Roads 2180 and 2015 in Nutrioso to eliminate flooding hazard due to Wallow Fire and ensuing run off	Flood	$100,000	Ongoing	Engineering Department / County Engineer	Highway User Revenue Fund	Complete	Delete	Crossings were constructed utilizing a FEMA grant

Table 6-7-2: Eagar Assessment of Previous Mitigation Strategy

Description	Hazard(s) Mitigated	Estimated Cost	Anticipated Completion Date	Primary / Lead Agency	Potential Funding Source(s)	Status	Disposition	Explanation for 'no progress' or description of work so far
Continue to enforce zoning and building codes through current site plan, subdivision, and building permit review processes to reduce the effects of drought, flood, severe wind, and other hazards on new and/or remodeled buildings and infrastructure	All	$1,500	On Going	Community Development	General Fund	In Progress	Keep	Adopted 2012 building codes
Expand wildfire public education activities to include public service announcements, public access TV, website	Wildfire	$2,000	Ongoing	Fire	General Fund	In Progress	Keep	Ready Set Go is an annually conducted outreach program. Social media is also utilized.
Develop resource materials describing potential hazards due to severe wind events and how to mitigate	Severe Wind	$2,000	Ongoing	Community Development	General Fund	No Progress	Keep	Some measures captured in building code
Buy backup generators for the Fire and Public Works Departments to mitigate against power failures during hazard events	Flood, Severe Wind, Winter Storm	$100,000	2014	Fire Public Works	Grants	Completed	Delete	
Research and develop new wells and Storage to more adequately supply the town in times of failure	Drought, Severe Wind, Winter Storm	$1,700,000	Ongoing	Public Works	Combination of Grants and Loans	In Progress	Keep	Acquired Golf Course Well 2016
Rehabilitate and channelize Water Canyon channel and improve roadway crossings	Flood	$1,500,000	2015	Public Works	Grants	Complete	Delete	
Develop a drainage master plan for the entire community	Flood	$60,000	2016	Public Works	Grants	No Progress	Keep	Lack of Funding
Perform basic remediation of existing drainage channels to reduce the effects of flooding.	Flood	$50,000	Ongoing	Public Works	Grants General Fund	In Progress	Keep	Drainage systems are cleaned annually.

Table 6-7-2: Eagar Assessment of Previous Mitigation Strategy

Description	Hazard(s) Mitigated	Estimated Cost	Anticipated Completion Date	Primary / Lead Agency	Potential Funding Source(s)	Status	Disposition	Explanation for 'no progress' or description of work so far
Conduct roadside thinning and mowing as well as general thinning and chipping on State and Private Land to reduce vulnerability to the effects of wildfire.	Wildfire	$75,000	Ongoing	Public Works, Fire	General Fund, Grants	In Progress	Keep	Work has been completed on Spanish Trail. Roadside thinning done as needed.
Review and update the current drought mitigation plan as needed.	Drought	$3,000	Ongoing	Public Works	Enterprise fund	In Progress	Keep	Plan has been updated 2016
Develop and adopt citywide water conservation standards, citing USGS precipitation records.	Drought	$3,000	Ongoing	Public Works	Enterprise Fund	In Progress	Keep	Conservation Standards are updated yearly
Construct flood control infrastructure to control flooding on South School Bus Rd.	Flood	$1,042,179	2016	Public Works	Grant	In Progress	Keep	Waiting on Final approval from FEMA for Grant.
Construct flood control infrastructure to control flooding on W. Lesueuer Dr.	Flood	$189,000	2012	Public Works	Grant	Complete	Delete	
Continue to ensure that Town of Eagar residents are safe from flooding by meeting the NFIP requirements for development within a Special Flood Hazard Area through enforcement of the Floodplain Ordinance.	Flood	Staff Time	Ongoing	Community Development	General Fund	In Progress	Keep	Acquired staff with CFM certification
Construct flood control infrastructure to control flooding near Alta Vista Dr & protect critical infrastructure i.e. the dome, which is utilized for emergency evacuations & is located in a moderate 0.02% shaded X flood zone and has experienced extensive flooding from multiple microbursts in recent years.	Flood	$466,442	2017	Public Works	Grant	In Progress	Keep	Waiting on Final approval from FEMA for Grant.

Springerville Assessment of Previous Mitigation Strategy

Description	Hazard(s) Mitigated	Estimated Cost	Anticipated Completion Date	Primary / Lead Agency	Potential Funding Source(s)	Status	Disposition	Explanation for 'no progress' or description of work so far
Continue to enforce zoning and building codes through current site plan, subdivision, and building permit review processes to reduce the effects of drought, flood, severe wind, and other hazards on new and/or remodeled buildings and infrastructure.	All	Staff Time	Ongoing	Planning and Zoning Dept Director	General Fund	In Progress	Keep	Ongoing- Up to date codes (IBC-UBC) are adopted into town code.
Promote adoption of Mutual Aid Agreements with all incorporated communities and adjoining counties for all hazards.	All	Staff Time	Ongoing (Annual Basis)	Town Manager	General Fund	In Progress	Keep	Will develop initial plan of action. IGA with neighboring communities and counties.
Upgrade firefighting capability by obtaining a fire tender and type 3 wildland engine.	Wildfire	$200,000	Pending Funding	Fire Chief	Grant, General Fund	Complete	Delete	Purchased one
Provide up to date equipment for Emergency Responders.	All	$25,000	Annual	Fire Chief, Police Chief	General Fund	In Progress	Keep	Ongoing- USDA and $100 Club monies applied for. Looking for other monies.
Purchase signage and barricade material for HAZMAT incidents.	HAZMAT	$25,000	2014	Fire Chief Police Chief	Homeland Security Grant	No Progress	Keep	Find funding to do such a project. No funding to do such a project.
Establish six full time positions for fire crew to respond to local and rural fire incidents.	Wildfire	$240,000	2016	Fire Chief	General Fund	No Progress	Keep	Find funding to do such a project. No funding to do such a project.
Develop resource materials describing potential hazards due to severe wind events and how to mitigate.	Severe Wind	$35,000	2016	Community Development Director	General Fund, Grants	No Progress	Keep	Will complete by 2018.

Springerville Assessment of Previous Mitigation Strategy

Description	Hazard(s) Mitigated	Estimated Cost	Anticipated Completion Date	Primary / Lead Agency	Potential Funding Source(s)	Status	Disposition	Explanation for 'no progress' or description of work so far
Train firefighters on wildfires through the State Land Department firefighting contract.	Wildfire	$25,000	2014	Fire Chief	Grant Funds	In Progress	Keep	Ongoing- Weekly meetings and trainings
Research and develop new wells to more adequately supply the town in times of failure.	Drought, Severe Wind, Winter Storm	$180,000	2014	Public Works Director	General Fund, Loan	In Progress	Keep	New East side well developed in 2016. New wells still need to be developed.
Continue to develop resource materials and educate the public regarding evacuation procedures and individual responsibilities in the event of an emergency.	All	$30,000	2013	Chief of Police	General Fund	In Progress	Keep	Ongoing- Nothing has been done so far. A goal has been set by 2018.
Develop a drainage master plan for the entire community	Flood	$50,000	2016	Planning and Zoning Director	General Fund	No Progress	Keep	Find funding to do such a project. No funding to do such a project.
Perform basic remediation of existing drainage channels to reduce the effects of flooding.	Flood	$50,000	2016	Planning and Zoning Director	General Fund	No Progress	Keep	Find funding to do such a project. Trying to work with Apache Co to do an H&H Study.
Develop and adopt citywide water conservation standards, citing USGS precipitation records.	Drought	$20,000	2016	Public Works Director	General Fund	Complete	Keep	Developed Drought Response Stages. USGS needs to be incorporated into it.
Work with Apache County to resolve ownership issues and improve erosion protection of abutments for Winema Bridge over the LCR.	Flood	$84,000	2016	Public Works Director	Grant Funding	No Progress	Keep	No contact from Apache Co Flood Control

Springerville Assessment of Previous Mitigation Strategy

Description	Hazard(s) Mitigated	Estimated Cost	Anticipated Completion Date	Primary / Lead Agency	Potential Funding Source(s)	Status	Disposition	Explanation for 'no progress' or description of work so far
Evaluate and install flood warning devices in strategic locations within the Town.	Flood	$45,000	2014	Chief of Police	Grant Funding	No Progress	Keep	Find funding to do such a project. No funding to do such a project.
Perform an audit of existing forms and procedures currently used by the Town to enforce the floodplain management ordinance, to ensure compliance with the NFIP requirements.	Flood	Staff Time	2013	Planning and Zoning Director	General Fund	No Progress	Keep	Will complete by 2018.

St Johns Assessment of Previous Mitigation Strategy								
Description	**Hazard(s) Mitigated**	**Estimated Cost**	**Anticipated Completion Date**	**Primary / Lead Agency**	**Potential Funding Source(s)**	**Status**	**Disposition**	**Explanation for 'no progress' or description of work so far**
Continue to enforce zoning and building codes through current site plan, subdivision, and building permit review processes to reduce the effects of drought, flood, severe wind, and other hazards on new and/or remodeled buildings and infrastructure	All	Staff Time	9-2013	Community Development / Director	General Fund	In progress	Keep	This will be continual.
Provide for the demolition or abatement of dangerous buildings that are in imminent danger of failure	Building Collapse	$160,000	8-2014	Community Development Director	General Fund	In progress	Keep	This will be a continual project we have abated several buildings so far.
Provide basic remediation of the existing LCR drainage channel between the Highway 180/191 bridge and 2nd West Crossing, to reduce the effects of flooding	Flooding	$1,500,000	5-2014	Public Works Director	Grant Funding	In progress	Keep	We have been working with the Zuni Tribe to find funding for this project.
Train firefighters on wildfires through the State Land Department firefighting contract	Wildfire	$30,000	9-2013	Fire Chief	Wildland Fund	In progress	Keep	Have trained several new firefighters, requires ongoing training.
Buy backup generators for all critical facilities to mitigate the effects of power outages associated with severe wind and winter storm events	Severe Wind, Winter Storm	$350,000	70% by 3-2012	Public Works Director	Rural Development Fund	In progress	Keep	Generator has been installed at Well #3.
Conduct roadside thinning and mowing along community roadways to reduce vulnerability to the effects of wildfire	Wildfire	$100,000	8-15-2012	Public Works Director, Fire Chief	HURF	In progress	Keep	Fire Dept to conduct control and prescribed fire for mitigation.
Place mitigation brochures developed by ADEM at City Hall as a hazard mitigation resource for citizens of St. Johns	All	$300	6-1-2011	City Manager	General Fund	No progress	Keep	Need to order brochures.

St Johns Assessment of Previous Mitigation Strategy

Description	Hazard(s) Mitigated	Estimated Cost	Anticipated Completion Date	Primary / Lead Agency	Potential Funding Source(s)	Status	Disposition	Explanation for 'no progress' or description of work so far
Continue to find and remediate non-reporting HAZMAT locations	HAZMAT	$250,000	9-2014	Public Works Director	Brownfield Grants	In progress	Keep	We have completed I Brownfield Project.
Develop IGA with Apache Flood Control District for establishing procedural guidelines for the implementation and enforcement of the NFIP floodplain management.	Flooding	$5,000	9-2019	Public Works Director	General Fund	No progress	Keep	Need to sit down with AFCD and formulate plan.